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APC-3XX9A
Panel PC User Manual

Release Date	Revision
Aug. 2014	V1.0

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Warning!

This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions manual, it may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference in which case the user at his own expense will be required to take whatever measures may be required to correct the interference.

Electric Shock Hazard – Do not operate the machine with its back cover removed. There are dangerous high voltages inside.

Packing List

Accessories (as ticked) included in this package are:
☐ AC power cable ☐ Driver & manual CD disc ☐ Other._____(please specify)

Safety Precautions

Follow the messages below to prevent your systems from damage:

- Avoid your system from static electricity on all occasions.
- Prevent electric shock. Don‘t touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.
- Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

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Chapter 1 Getting Started

1.1 Features

- Intel 4th Gen Core i5-4402E 1.6GHz processor (Haswell)
- Intel QM87
- 2 x DDR3 1600MHz SO-DIMM, up to 16GB system memory
- Fanless Design
- Support 1 x PCIe x16 slot
- DC 12~19V Power input
- Front Panel IP65

1.2 Specifications

	APC-3229A	APC-3249A
System		
CPU	Intel 4th Gen Core i5-4402E 1.6GHz processor (Haswell) TPD 25W	
System Memory	2 x 204 Pin DDR3 SO-DIMM, default 4GB (one slot), up to 8GB 1066/1333MHz	
System Chipset	Intel QM87	
I/O port	● 2 x DB9 RS-232/422/485 default RS-232 (COM1/COM2) ● 1 x DB9 RS-232 (COM3 for Option) ● 1 x VGA ● 1 x HDMI with Cover ● 2 x DisplayPort ● 2 x RJ45 GbE LAN ● 4 x USB 3.0 ● 1 x Mic-in, Line-Out ● 1 x 8 pin 3in/out/VCC/GND terminal block connector (for option) ● 1 x 3pin DC power connector ● 1 x Rocker switch for power on/off (for option) ● 2 x LED light for power and HDD indication	
Storage	2 x 2.5" SATA HDD space (Easily Accessible storage design) Support RAID 0/1	
CD/DVD-R Device	1 x Slim DVDRW device for option	

	1 x External CF slot by TB-503 for option.	
OS Support	Windows XP embedded, Windows embedded standard 7, Windows 7 Pro for embedded, Windows 8	
LCD		
LCD Size/ Brand	21.5” AUO	24” AUO
Max. Resolution	1920x1080	1920x1080
Max. Color	16.7M	16.7M
Luminance (cd/m^2)	250	300
Contrast Ratio	3000 : 1	3000 : 1
View Angle	H178 / V178	H178/V178
Backlight Lifetime	30,000 hrs	50,000hrs
Touch Screen (Optional) - Resistive Type		
Brand	Higgstec	
Interface	Default USB Optional RS-232	
Projected Capacitive Touch		
Interface	Default USB	
TS control Board	On board touch tail	
Power Supply		
Power Input	12~19V DC on board	
Mechanical		
Front Bezel	Panel mount Steel black/VESA mount 100x100	
Rear Panel	Steel black	
Environmental		
Operating Temperature	0~50 ° C	
Storage Temperature	-20~60 ° C	
Storage Humidity	10~90% @40℃ non-condensing	
Vibration	1G / 5 ~ 500Hz (Random) / Operation	
Shock	19G peak acceleration(11 msec. duration)/operation	
Certificate	Meet CE/FCC Class A	
Waterproof / Dustproof	Panel IP65	

1.3 Dimensions

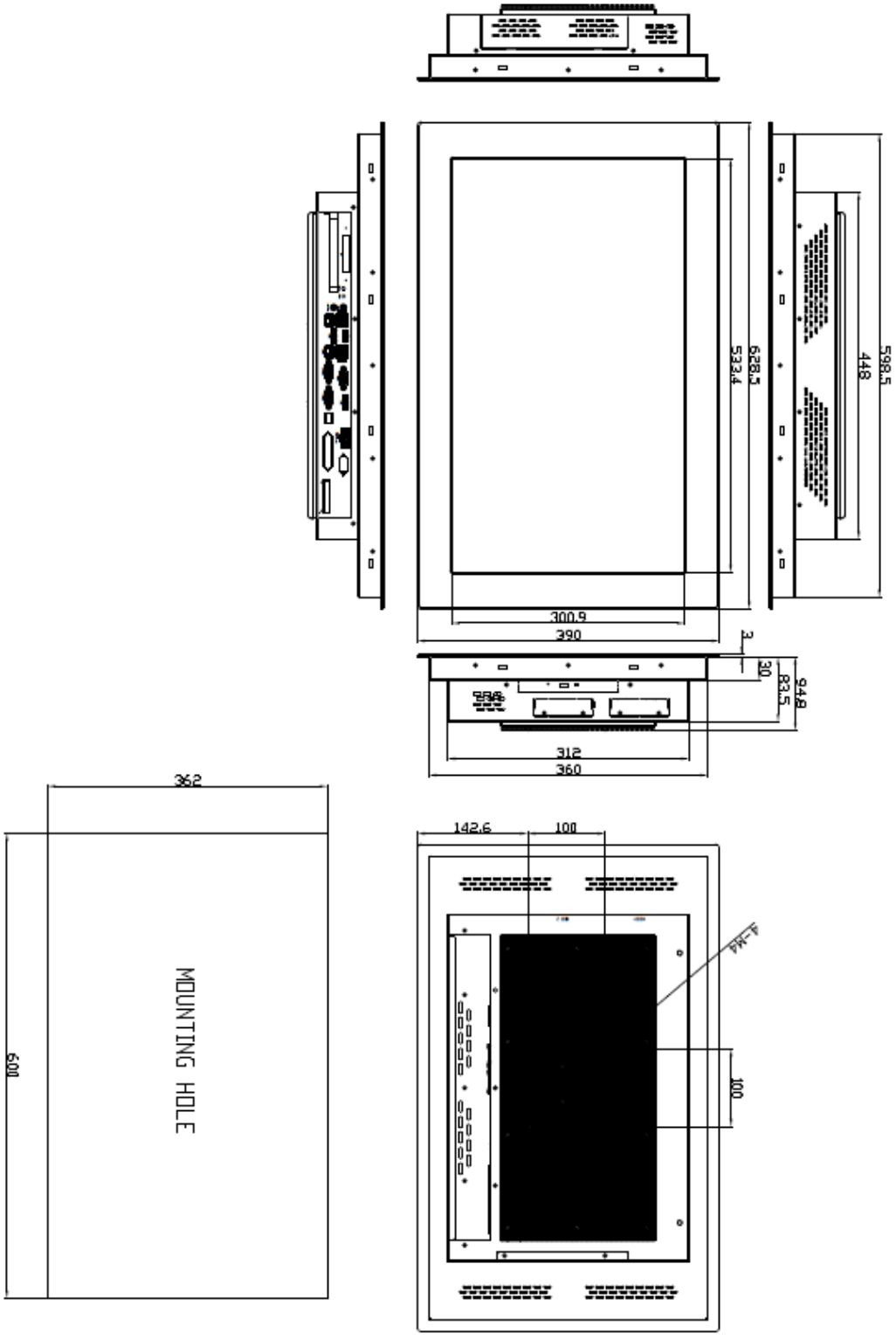


Figure 1.1: Dimensions of APC-3229A

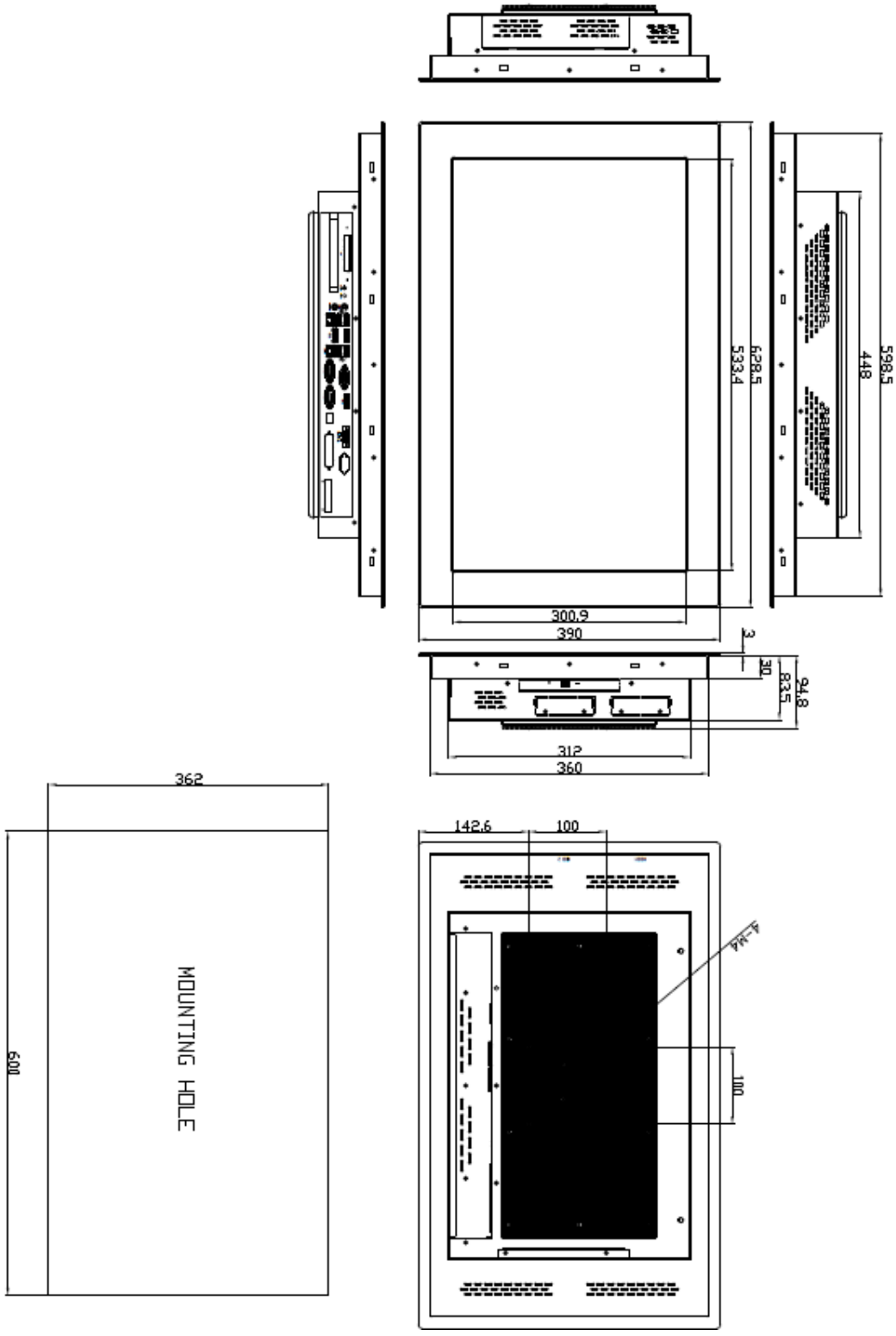
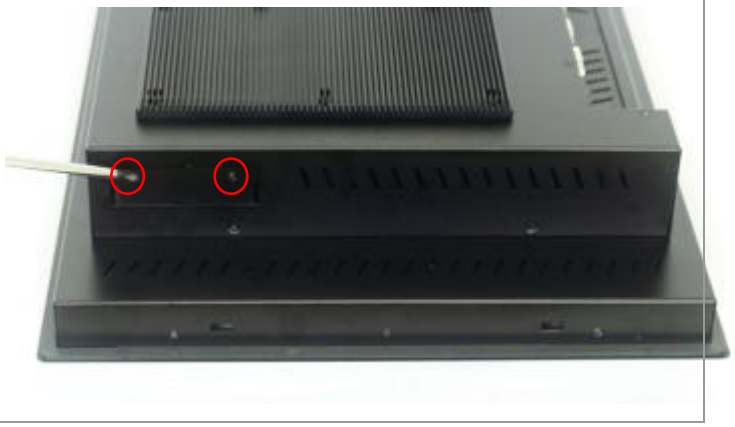


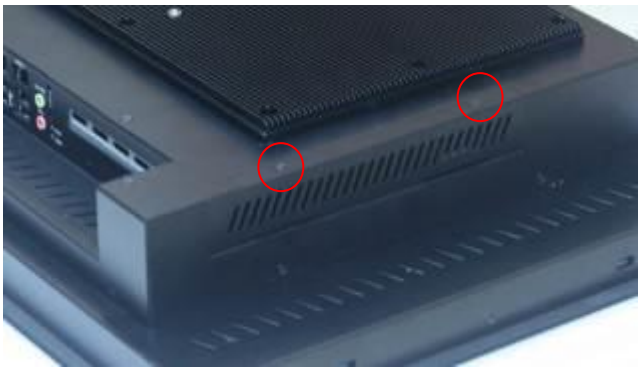
Figure 1.2: Dimensions of APC-3249A

1.4 Installation of HDD

Step 1 There are 2 screws to deal with when Installing of HDD.	
Step 2 Loosen screw and draw the HDD bracket out as shown in the picture.	
Step 3 Tighten four screws as shown in the picture	

Step 4 Push into the HDD bracket as shown in the picture.	
Step 5 Tighten the 2 screws as shown in the picture. That's how it should look after it has been installed.	

1.5 Installation of PCI Add-on &CF

Step 1 There are 2 screws to deal with when enclosing or removing the chassis.	
Step 2 Now slide the addon into the PCI slot, making sure the golden part faces the slot. When the part that is interfaced together come into the right contact, slightly push the addon into the rail of the slot.	
Step 3 After sliding the addon into the PCI expansion slot, get the one screw as circled tightened to finish the connection.	

1.6 Brief Description of the APC-3XX9A

APC-3XX9A is a fanless and high-performance panel-mount industrial panel PC with 21.5”/24” TFT LCD. It is powered by an Intel 4th Gen Core i5-4402E 1.6GHz processor. The panel PC has a rich variety of functions and peripherals. It comes with two 2.5” SATA HDD space and one optional External CF slot by TB-503 for data storage, support 2 x 204-pin DDR3 SO-DIMM 1066/1333MHz, up to 8GB, support rich I/O, and also provide 1 x PCIe x 16 slot, it can ensure simplified connectivity to a variety of external peripheral devices. The OS supports Windows XP Embedded, Windows Embedded Standard 7, Windows 7 Pro for Embedded, Windows 8.

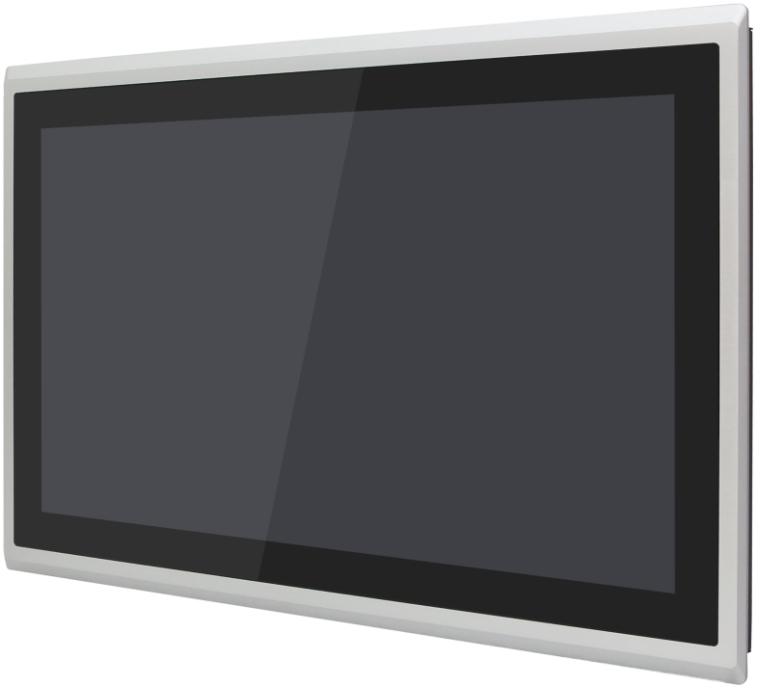


Figure 1.3: Front View of APC-3229A

Figure 1.4: Rear View of APC-3229A

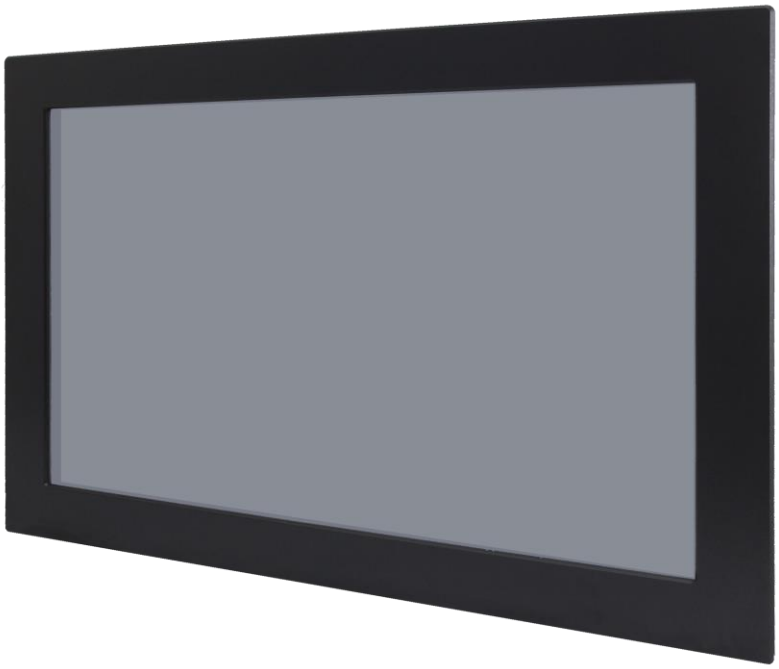


Figure 1.5: Front View of APC-3249A

Figure 1.6: Rear View of APC-3249A

Chapter 2 Hardware

2.1 Mainboard

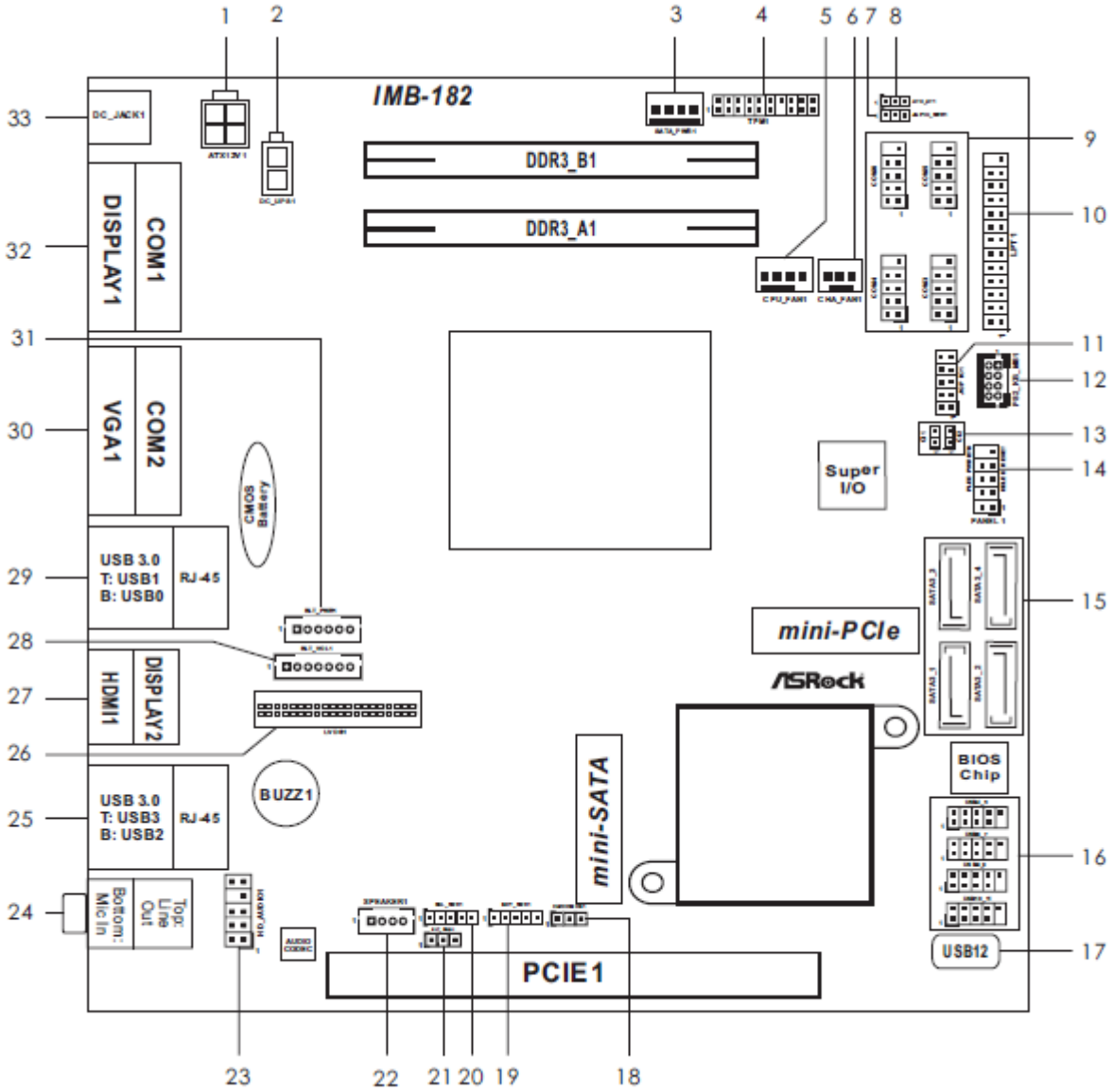


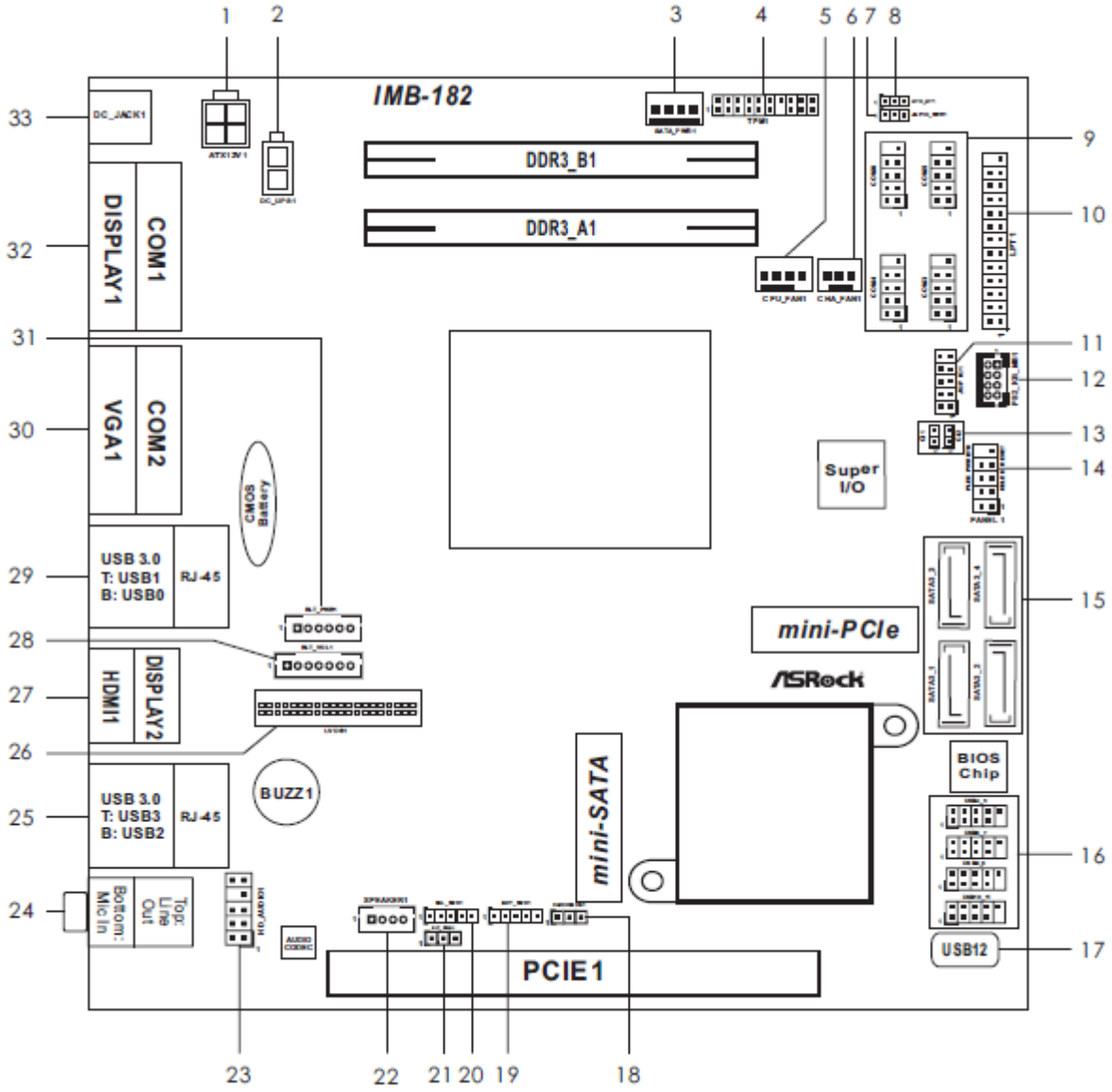
Figure 2.1: Mainboard Overview

2.2 Specifications

Form Factor	Dimensions	Mini-ITX (6.7-in x 6.7-in)
Processor System	CPU	Socket BGA 1364 for Intel® Core i7/i5/i3/mobile processor (Haswell)
	Core Number	(By CPU, Max 4)
	MAX Speed	(By CPU)
	L3 Cache	(By CPU)
	Chipset	QM87
	BIOS	UEFI
Expansion Slot	PCI	0
	Mini-PCIe	1 (Full size)
	mSATA 1 (Full size)	1 (Full size)
	PCIe	1 (x16) with Riser card extend to x8+x8 or x8+x4+x4
	CFast Card Socket	0
Memory	Technology	Dual Channel DDR3 1066/1333/1600 MHz SDRAM
	Max.	16GB
	Socket	2 x SO-DIMM
Graphics	Controller	Intel® HD Graphics (By CPU)
	VRAM	Shared Memory
	VGA	Supports max resolution 1920x1200
	LVDS	1
	HDMI	Supports HDMI 1.4a, max resolution 4096x2304
	DVI	No
	Display Port	Supports max resolution 3840x2160
	Multi Display	Yes (Three Display)
Ethernet	Ethernet	10/100/1000 Mbps
	Controller	GbE LAN1: Intel® I210, LAN2: Intel® I217LM (with v-Pro support)
	Connector	2 x RJ-45
SATA	Max Data Transfer	SATA2 (3.0Gb/S), SATA3 (6.0Gb/S), Supports RAID 0/1/5/10

	Rate	
Rear I/O	VGA	1
	DVI	0
	HDMI	1
	Display Port	2
	Ethernet	2
	USB	4 x USB 3.0 compliant
	Audio	2 (Mic-In, Line-Out)
	Serial	2 (RS-232/422/485)
	PS/2	0
Internal Connector	USB	- 8 (4 x USB Header 2.54mm pitch) - 1 Vertical Type A USB Connector
	LVDS/ Inverter	24 bit dual channel LVDS
	VGA	0
	Serial	4 (RS-232)
	SATA	4 x SATA3 (6.0Gb/s), Support RAID 0/1/5/10
	mPCIe	1
	Parallel	1
	mSATA	1
	IrDA	0
	GPIO 8-bit	4 x GPI + 4 x GPO
	SATA PWR Output Con	1
	Speaker Header	0
Watchdog Timer	Output	Output from super I/O to drag RESETCON#
	Interval	256 Segments, 0,1,2…255 Sec/Min
Power Requireme	Input PWR	DC-in 12V~19V
	Power On	AT/ATX Supported -AT : Directly PWR on as power input ready -ATX : Press button to PWR on after power input ready
Environment	Temperature	0ºC – 60ºC

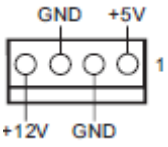
2.3 Jumpers and Headers Setting Guide



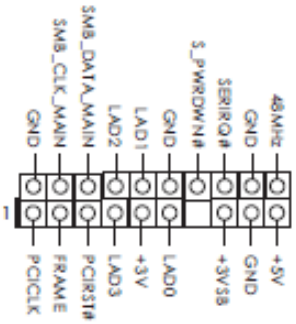
1 : ATX Power Connector
(Input 9V-19V)
1-2: GND
3-4: DC Input

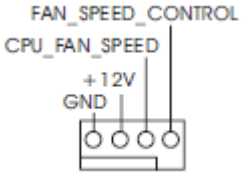
2 : 2-pin UPS Module Power Input Connector

3 : SATA Power Output Connector

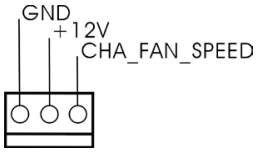


4 : TPM Header



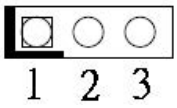


5 : 4-Pin CPU FAN Connector (+12V)

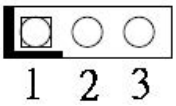


6 : 3-Pin Chassis FAN Connector (+12V)

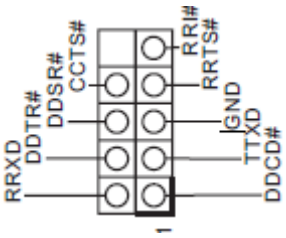
7 : Digital Input / Output Power select
1-2: +12V
2-3: +5V



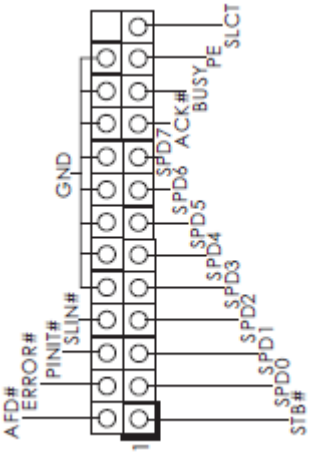
8 : ATX/AT Mode Jumper
1-2: AT Mode
2-3: ATX Mode



9 : COM3, 4, 5, 6 Headers (RS232)



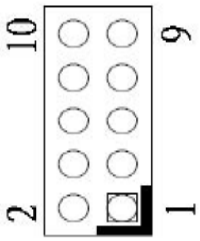
10 : Printer Port Header



11 : Digital Input / Output

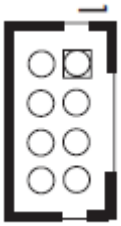
Pin Header

PIN	Signal Name	PIN	Signal Name
10	GND	9	JGPIO_PWR1
8	SIO_GP23	7	SIO_GP27
6	SIO_GP22	5	SIO_GP26
4	SIO_GP21	3	SIO_GP25
2	SIO_GP20	1	SIO_GP24



12 : PS2_KB_MS1

PIN	Signal Name
1	KBCLK
2	+5V
3	KBDATA
4	+5V
5	MSDATA
6	GND
7	MSCLK
8	GND



13 : Chassis Intrusion Headers

CI1:

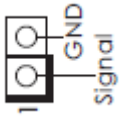
Close: Active case open

Open: Normal

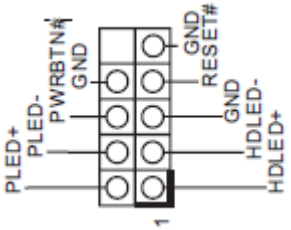
CI2:

Close: Normal

Open: Active case open

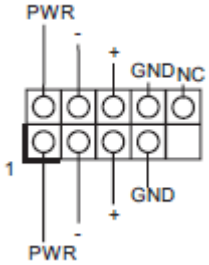


14 : System Panel Header



15 : SATA3 Connectors

16 : USB2.0 Connectors

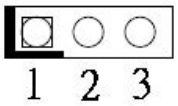


17 : USB2.0 Port (USB12)

18 : Clear CMOS Header

1-2: Normal

2-3: Clear CMOS



19 : BKT_PWR1

1-2: LCD_BLT_VCC: +5V

2-3: LCD_BLT_VCC: +12V

4-5: LCD_BLT_VCC: DC_IN

20 : PNL_PWR1

1-2: LVDD: +3V

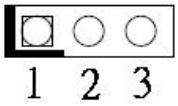
2-3: LVDD: +5V

4-5: LVDD: +12V

21 : BLT_PWM1

1-2 : +3V Level

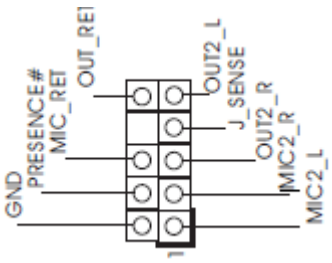
2-3 : +5V Level



22 : 3W Audio AMP Output Wafer

PIN	Signal Name
1	SPK R-
2	SPK R+
3	SPK L+
4	SPK L-

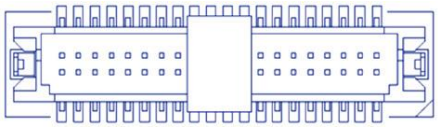
23 : Front Panel Audio Header



24 : Audio Jacks
Green - Line Out
Pink - Mic In

25 : Top : RJ45 LAN Port2
Bottom : USB3.0 (USB_2_3)

26 : LVDS Panel Connector



PIN	Signal Name	PIN	Signal Name
1	LVDD	2	LVDD
3	+3V	4	N/A
5	N/A	6	LVDS_A_DATA0#
7	LVDS_A_DATA0	8	GND1
9	LVDS_A_DATA1#	10	LVDS_A_DATA1
11	GND6	12	LVDS_A_DATA2#
13	LVDS_A_DATA2	14	GND2
15	LVDS_A_DATA3#	16	LVDS_A_DATA3
17	GND7	18	LVDS_A_CLK#
19	LVDS_A_CLK	20	GND3
21	LVDS_B_DATA0#	22	LVDS_B_DATA0
23	GND8	24	LVDS_B_DATA1#
25	LVDS_B_DATA1	26	GND4
27	LVDS_B_DATA2#	28	LVDS_B_DATA2
29	DPLVDD_EN	30	LVDS_B_DATA3#
31	LVDS_B_DATA3	32	GND5
33	LVDS_B_CLK#	34	LVDS_B_CLK
35	GND9	36	CON_LBKLT_EN_R
37	CON_LBKLT_CTR_R	38	LCD_BLT_VCC
39	LCD_BLT_VCC	40	LCD_BLT_VCC

27 : Top : DisplayPort
Bottom : HDMI

28 : Backlight Volume Control

PIN	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DW
3	PWRDN
4	LVDS1 BLUP
5	LVDS1 BLDW
6	GND
7	GND

29 : Top : RJ45 LAN Port1
Bottom : USB3.0 (USB_0_1)

30 : Top : COM2
Bottom : VGA

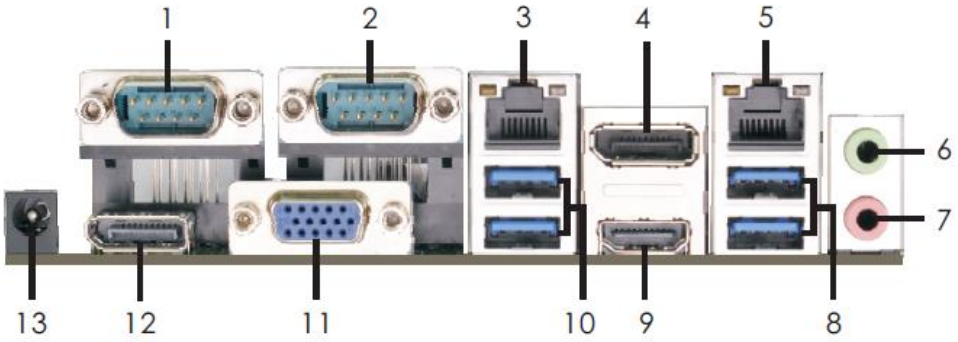
31 : Backlight Power Connector

PIN	Signal Name
1	GND
2	GND
3	BL CTL
4	BL EN
5	LCD_BLT_VCC
6	LCD_BLT_VCC

32 : Top : COM1
Bottom : DisplayPort

33 : DC Jack

2.4 I/O Panel



1	COM Port (COM1)	8	USB 3.0 Ports (USB_23)
2	COM Port (COM2)	9	HDMI Port (HDMI1)
* 3	LAN RJ-45 Port (LAN1)	10	USB 3.0 Ports (USB_01)
4	DisplayPort (DP2)	11	VGA Port (VGA1)
* 5	LAN RJ-45 Port (LAN2)	12	DisplayPort (DP1)
6	Line out (Lime)	13	DC Jack (DC_JACK1)
7	Microphone (Pink)		

* There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.

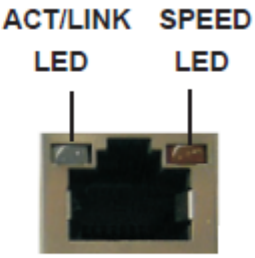
LAN Port LED Indications

Activity/Link LED

Status	Description
Off	No Link
Blinking	Data Activity
On	Link

SPEED LED

Status	Description
Off	10Mbps connection
Orange	100Mbps connection
Green	1Gbps connection



2.5 Installation

This is a Mini-ITX form factor (6.7" x 6.7", 17.0 x 17.0 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

2.5.1 Screw Holes

Place screws into the holes to secure the motherboard to the chassis.

Do not over-tighten the screws! Doing so may damage the motherboard.

2.5.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.

Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply.
Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

2.5.3 Installation of Memory Modules (SO-DIMM)

This motherboard provides two 204-pin DDR3 (Double Data Rate 3) SO-DIMM slots.

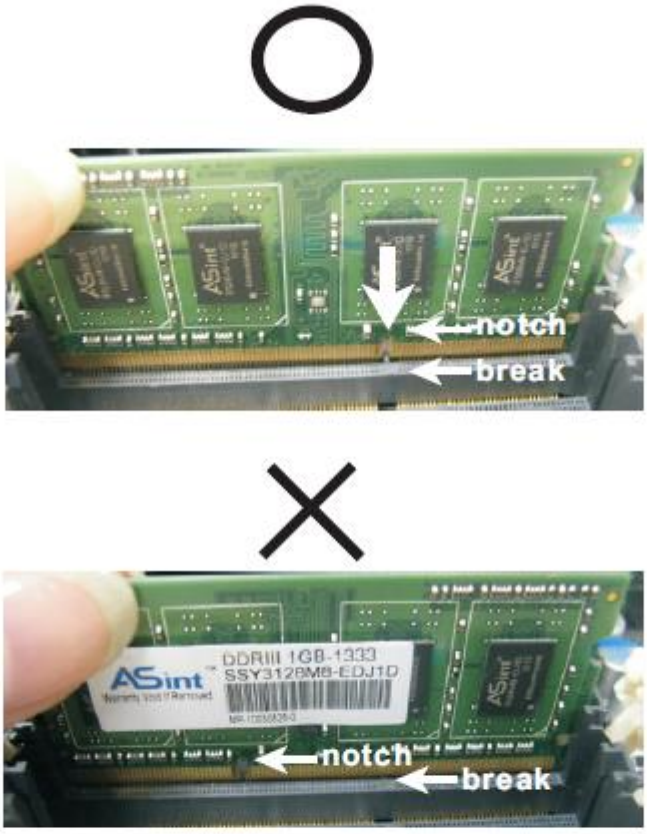
It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and SO-DIMM may be damaged.

2.5.4 Installing a SO-DIMM

Please make sure to disconnect power supply before adding or removing SO-DIMMs or the system components.

Step 1. Unlock a SO-DIMM slot by pressing the retaining clips outward.

Step 2. Align a SO-DIMM on the slot such that the notch on the SO-DIMM matches the break on the slot.



The SO-DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the SO-DIMM if you force the SO-DIMM into the slot at incorrect orientation.

Step 3. Firmly insert the SO-DIMM into the slot until the retaining clips at both ends fully snap back in place and the SO-DIMM is properly seated.

2.5.5 Expansion Slots (PCI Express, mini-PCIe and mini-SATA Slots)

There is 1 PCI Express slot, 1 mini-PCIe slot and 1 mini-SATA slot on this motherboard.

PCIE slot: PCIE1 (PCIE x16 slot; Blue) is used for PCI Express x16 lane width graphics cards.

Pin	Side B	Side A
1	+12V	PRSNT#
2	+12V	+12V
3	+12V	+12V
4	Ground	Ground
5	SMCLK	PCH_ECLK_X8
6	SMDAT	PCH_ECLK_X8#
7	Ground	PCH_ECLK_X4
8	+3.3V	PCH_ECLK_X4#
9	Reserved	+3.3V
10	+3VSB	+3.3V
11	WAKE#	PCIE_RESET#
12	X8_PRSNT#	Ground
13	Ground	PCH_ECLK_X16
14	HSOP0	PCH_ECLK_X16#
15	HSON0	Ground
16	Ground	HSIP0
17	PRSNT#1	HSIP0
18	Ground	Ground
19	HSOP1	Reserved
20	HSON1	Ground
21	Ground	HSIP1
22	Ground	HSIP1
23	HSOP2	Ground
24	HSON2	Ground
25	Ground	HSIP2
26	Ground	HSIP2
27	HSOP3	Ground
28	HSON3	Ground
29	Ground	HSIP3
30	X4_PRSNT#	HSIP3
31	PRSNT#2	Ground
32	Ground	Reserved
33	HSOP4	Reserved
34	HSON4	Ground
35	Ground	HSIP4
36	Ground	HSIP4
37	HSOP5	Ground
38	HSON5	Ground
39	Ground	HSIP5
40	Ground	HSIP5
41	HSOP6	Ground

Pin	Side B	Side A
42	HSON6	Ground
43	Ground	HSIP6
44	Ground	HSIP6
45	HSOP7	Ground
46	HSON7	Ground
47	Ground	HSIP7
48	PRSNT#3	HSIP7
49	Ground	Ground
50	HSOP8	Reserved
51	HSON8	Ground
52	Ground	HSIP8
53	Ground	HSIP8
54	HSOP9	Ground
55	HSON9	Ground
56	Ground	HSIP9
57	Ground	HSIP9
58	HSOP10	Ground
59	HSON10	Ground
60	Ground	HSIP10
61	Ground	HSIP10
62	HSOP11	Ground
63	HSON11	Ground
64	Ground	HSIP11
65	Ground	HSIP11
66	HSOP12	Ground
67	HSON12	Ground
68	Ground	HSIP12
69	Ground	HSIP12
70	HSOP13	Ground
71	HSON13	Ground
72	Ground	HSIP13
73	Ground	HSIP13
74	HSOP14	Ground
75	HSON14	Ground
76	Ground	HSIP14
77	Ground	HSIP14
78	HSOP15	Ground
79	HSON15	Ground
80	Ground	HSIP15
81	PRSNT#4	HSIP15
82	Reserved	Ground

Support X8X8 Riser Card

Slot	Starpping Pin	Clock Source
Slot1 X8	Riser card side B12 pin to GND	A13 & A14
Slot2 X8		A5 & A6

Support X8X4X4 Riser Card

Slot	Starpping Pin	Clock Source
Slot1 X8	Riser card side B30 pin to GND	A13 & A14
Slot2 X4		A5 & A6
Slot3 X4		A7 & A8

mini-PCIe slot:

MINI_PCIE1 (mini-PCIe slot) is used for PCI Express mini cards.

mini-SATA slot:

MSATA1 (mini-SATA slot) is used for mSATA cards.

2.5.6 Installing an Expansion Card

Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

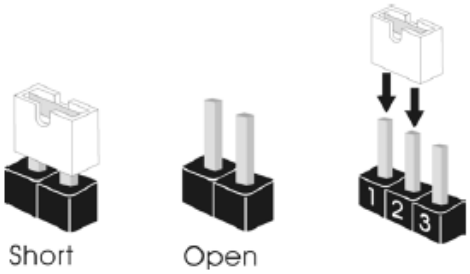
Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

2.5.7 Jumpers Setup

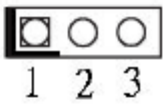
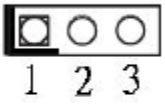
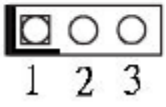
The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is “Short”. If no jumper cap is placed on pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when jumper cap is placed on these 2 pins.



Jumper	Setting	Description
Clear CMOS Jumper (3-pin CLRCMOS1) (see p.8, No. 18)		

Note:

CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile and MAC address will be cleared only if the CMOS battery is removed.

Panel Power Selection (5-pin PNL_PWR1) (see p.8, No. 20)		1-2 : LVDD: +3V 2-3 : LVDD: +5V 4-5 : LVDD: +12V
Backlight Power Selection (5-pin BKT_PWR1) (see p.8, No. 19)		1-2: LCD_BLT_VCC: +5V 2-3: LCD_BLT_VCC: +12V 4-5: LCD_BLT_VCC: DC_IN
ATX/AT Mode Selection (3-pin PWR_JP1) (see p.8, No. 8)		1-2 : AT Mode 2-3 : ATX Mode
BLT_PWM1 (3-pin BLT_PWM1) (see p.8, No. 21)		1-2 : +3V Level 2-3 : +5V Level
Digital Input / Output Power select (3-pin JGPIO_PWR1) (see p.8, No. 7)		1-2 : +12V 2-3 : +5V

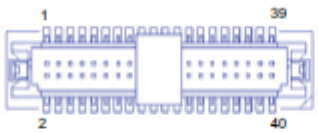
2.6 Onboard Headers and Connectors

Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

LVDS Panel Connector

(40-pin LVDS1)

(see p.8, No. 24)



PIN	Signal Name	PIN	Signal Name
1	LVDD	2	LVDD
3	+3V	4	N/A
5	N/A	6	LVDS_A_DATA0#
7	LVDS_A_DATA0	8	GND1
9	LVDS_A_DATA1#	10	LVDS_A_DATA1
11	GND6	12	LVDS_A_DATA2#
13	LVDS_A_DATA2	14	GND2
15	LVDS_A_DATA3#	16	LVDS_A_DATA3
17	GND7	18	LVDS_A_CLK#
19	LVDS_A_CLK	20	GND3
21	LVDS_B_DATA0#	22	LVDS_B_DATA0
23	GND8	24	LVDS_B_DATA1#
25	LVDS_B_DATA1	26	GND4
27	LVDS_B_DATA2#	28	LVDS_B_DATA2
29	DPLVDD_EN	30	LVDS_B_DATA3#
31	LVDS_B_DATA3	32	GND5
33	LVDS_B_CLK#	34	LVDS_B_CLK
35	GND9	36	CON_LBKLT_EN_R
37	CON_LBKLT_CTR_R	38	LCD_BLT_VCC
39	LCD_BLT_VCC	40	LCD_BLT_VCC

Backlight Power Connector

(6-pin BLT_PWR1)

(see p.8, No. 26)

PIN	Signal Name
1	GND
2	GND
3	BL CTL
4	BL EN
5	LCD_BLT_VCC
6	LCD_BLT_VCC

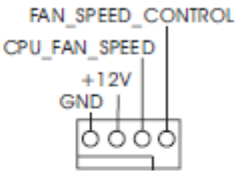
Backlight Volume Control

(7-pin BLT_VOL1)
(see p.8, No. 25)

PIN	Signal Name
1	GPIO_VOL_UP
2	GPIO_VOL_DW
3	PWRDN
4	LVDS1 BLUP
5	LVDS1 BLDW
6	GND
7	GND

CPU Fan Connector

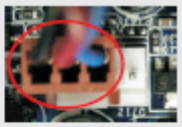
(4-pin CPU_FAN1)
(see p.8 No. 5)



Please connect the CPU fan cable to the connector and match the black wire to the ground pin.

Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

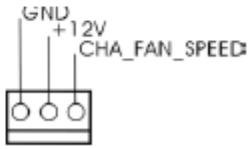
Pin 1-3 Connected



3-Pin Fan Installation

Chassis Fan Connector

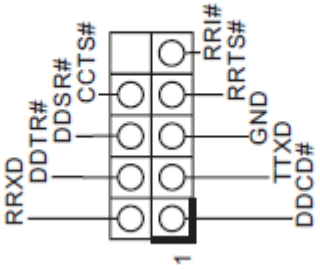
(3-pin CHA_FAN1)
(see p.8, No. 6)



Please connect the fan cable to the fan connector and match the black wire to the ground pin.

COM3, 4, 5, 6 Headers (RS232)

(9-pin COM3/COM4/COM5/COM6:
see p.8, No. 9)



UPS Module Power Input Connector

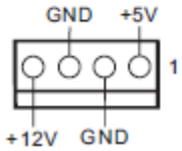
(2-pin DC_UPS1)

(see p.8, No. 2)

SATA Power Output Connector

(4-pin SATA_PWR1)

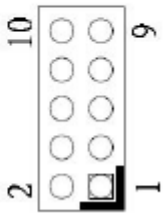
(see p.8, No. 3)



Digital Input / Output Pin Header

(10-pin JGPIO1)

(see p.8, No. 11)

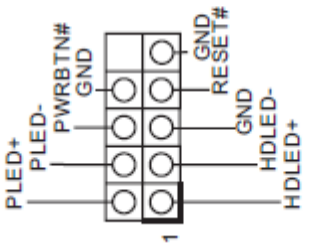


PIN	Signal Name	PIN	Signal Name
10	GND	9	JGPIO_PWR1
8	SIO_GP23	7	SIO_GP27
6	SIO_GP22	5	SIO_GP26
4	SIO_GP21	3	SIO_GP25
2	SIO_GP20	1	SIO_GP24

System Panel Header

(9-pin PANEL1)

(see p.8, No. 14)



This header accommodates several system front panel functions.

Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

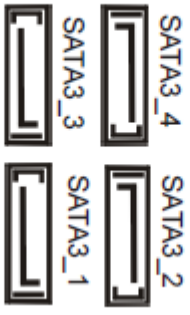
PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

SATA3 Connectors

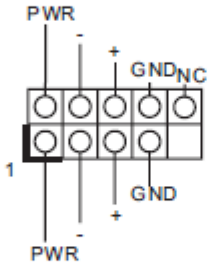
(SATA3_1/SATA3_2/SATA3_3/SATA3_4: see p.8, No. 15)



These four Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

USB 2.0 Headers

(9-pin USB4_5/USB6_7/USB8_9/USB10_11: see p.8, No. 16)

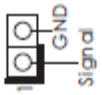


(USB12: see p.8, No. 17)

There are four USB 2.0 headers and one port on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

Chassis Intrusion Headers

(2-pin CI1/CI2: see p.8, No. 13)



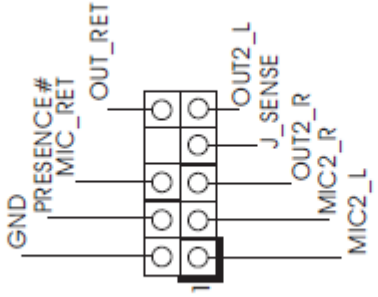
This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

CI1:
Close: Active case open
Open: Normal
CI2:
Close: Normal
Open: Active case open

Front Panel Audio Header

(9-pin HD_AUDIO1)

(see p.8 No. 23)



This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

3W Audio Amp Output Wafer

(4-pin SPEAKER1)

(see p.8, No. 22)

PIN	Signal Name
1	SPK R-
2	SPK R+
3	SPK L+
4	SPK L-

ATX Power Connector (Input 9V-19V)

(4-pin ATX12V1)

(see p.8, No. 1)

Please connect an ATX 12V power supply to this connector.

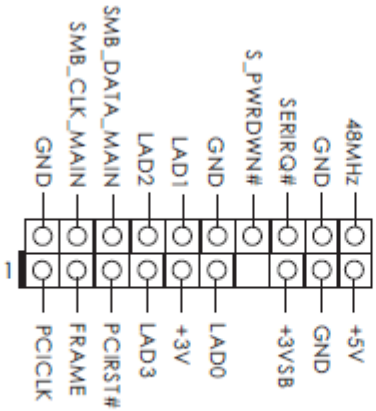
1-2: GND

3-4: DC Input

TPM Header

(19-pin TPM1)

(see p.8, No. 4)

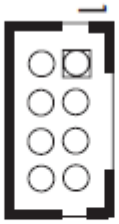


This connector supports a Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

PS2_KB_MS1

(8-pin PS2_KB_MS1)

(see p.8, No. 12)

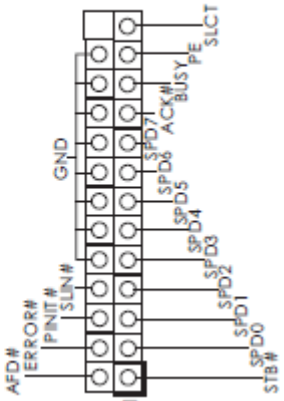


PIN	Signal Name
1	KBCLK
2	+5V
3	KBDATA
4	+5V
5	MSDATA
6	GND
7	MSCLK
8	GND

Print Port Header

(25-pin LPT1)

(see p.8, No. 10)



This is an interface for print port cable that allows convenient connection of printer devices.

2.7 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

Chapter 3 BIOS Setup

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctrl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
H/W Monitor	To display current hardware status
Boot	To set up the default system device to locate and load the Operating System
Security	To set up the security features
Exit	To exit the current screen or the UEFI SETUP UTILITY

Use < > key or < > key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

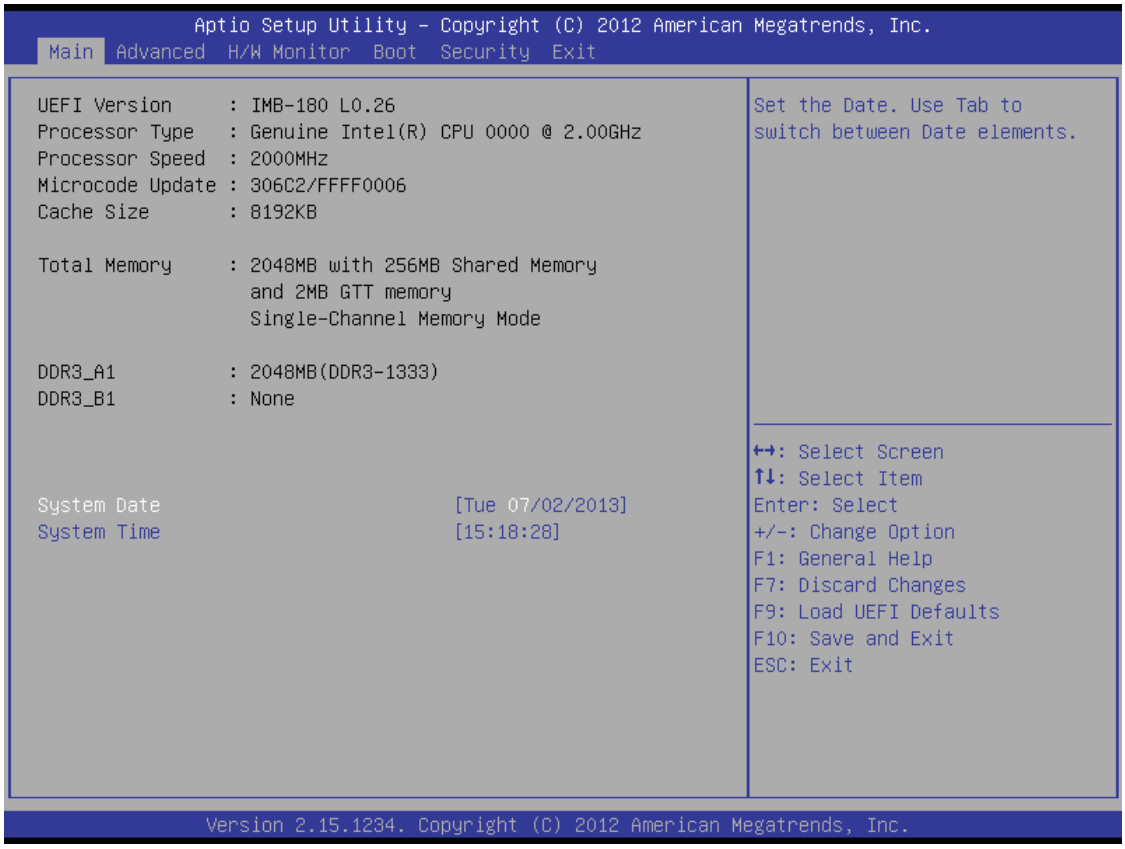
3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F7>	Discard changes
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	To jump to the Exit Screen or exit the current screen

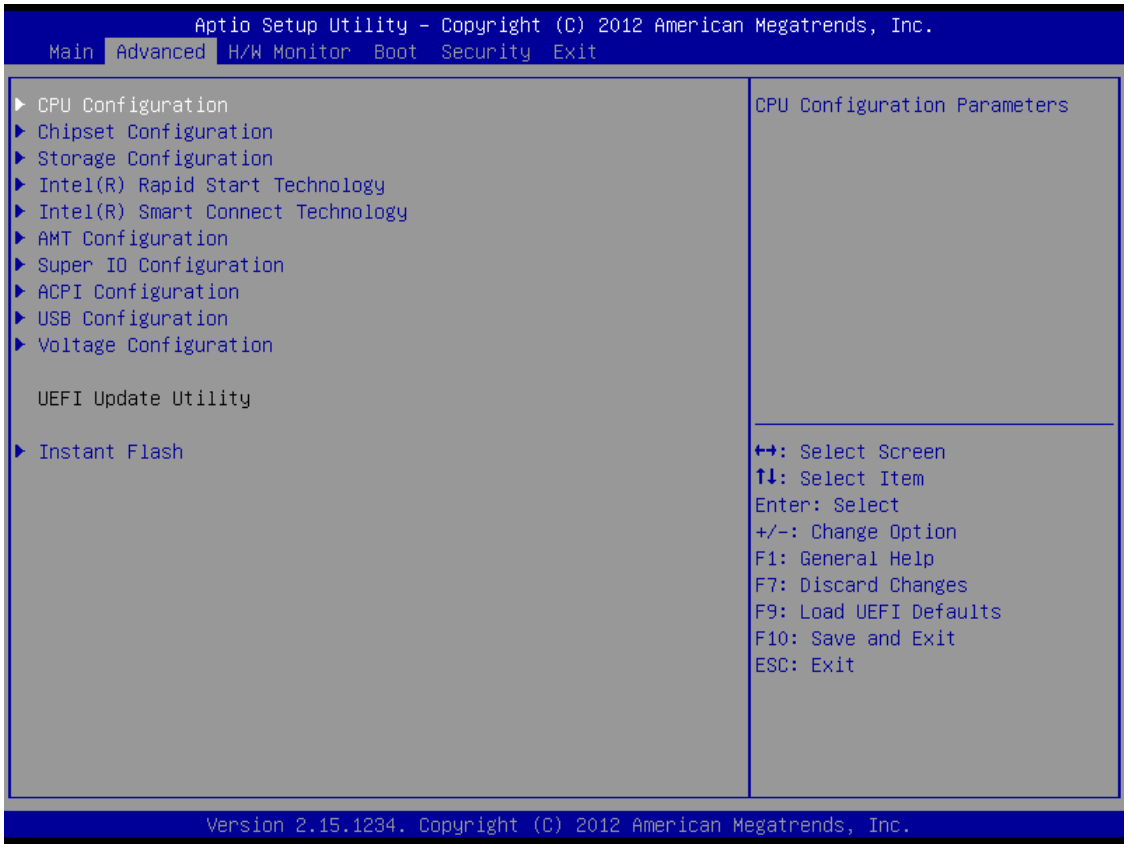
3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
UEFI Version : IMB-180 L0.26
Processor Type : Genuine Intel(R) CPU 0000 @ 2.00GHz
Processor Speed : 2000MHz
Microcode Update : 306C2/FFFF0006
Cache Size : 8192KB
Total Memory : 2048MB with 256MB Shared Memory
and 2MB GTT memory
Single-Channel Memory Mode
DDR3_A1 : 2048MB(DDR3-1333)
DDR3_B1 : None
System Date [Tue 07/02/2013]
System Time [15:18:28]
Set the Date. Use Tab to switch between Date elements.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, Intel(R) Rapid Start Technology, Intel(R) Smart Connect Technology, AMT Configuration, Super IO Configuration, ACPI Configuration, USB Configuration and Voltage Configuration.

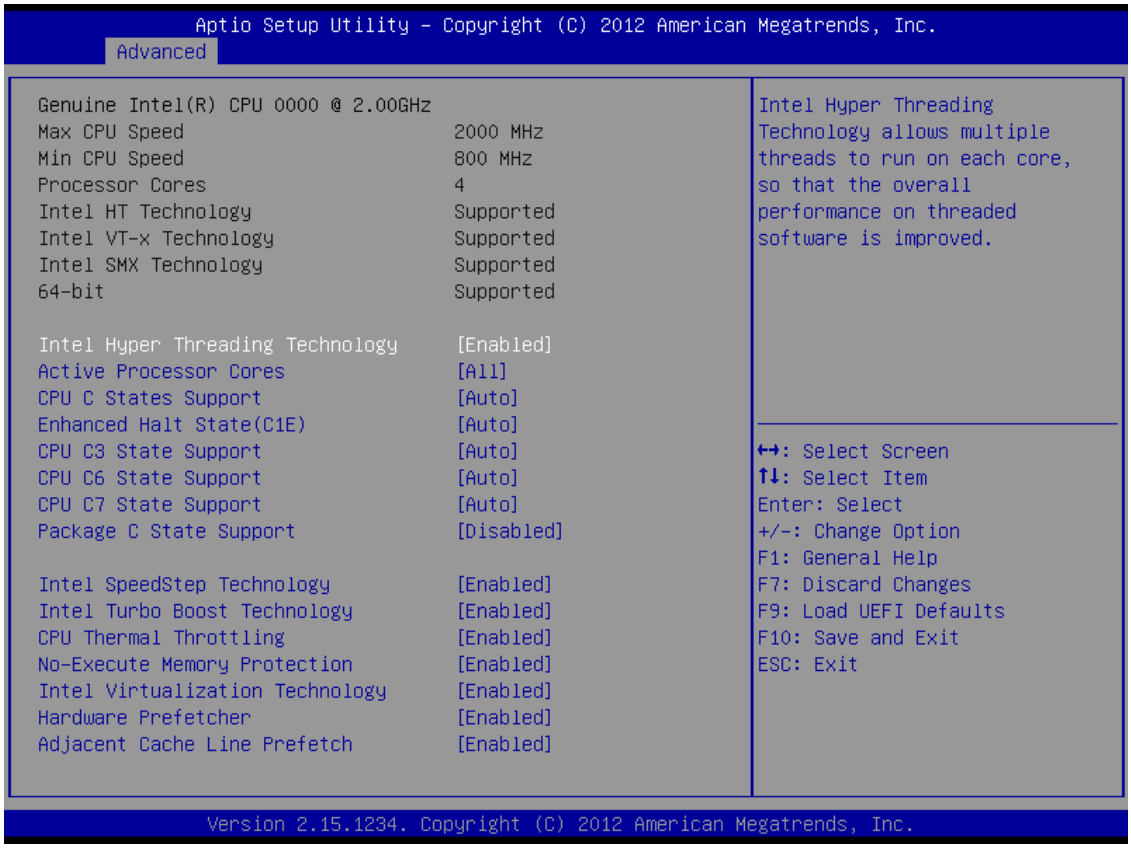


Setting wrong values in this section may cause the system to malfunction.

Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

3.3.1 CPU Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Genuine Intel(R) CPU 0000 @ 2.00GHz
Max CPU Speed 2000 MHz
Min CPU Speed 800 MHz
Processor Cores 4
Intel HT Technology Supported
Intel VT-x Technology Supported
Intel SMX Technology Supported
64-bit Supported
Intel Hyper Threading Technology [Enabled]
Active Processor Cores [All]
CPU C States Support [Auto]
Enhanced Halt State(C1E) [Auto]
CPU C3 State Support [Auto]
CPU C6 State Support [Auto]
CPU C7 State Support [Auto]
Package C State Support [Disabled]
Intel SpeedStep Technology [Enabled]
Intel Turbo Boost Technology [Enabled]
CPU Thermal Throttling [Enabled]
No-Execute Memory Protection [Enabled]
Intel Virtualization Technology [Enabled]
Hardware Prefetcher [Enabled]
Adjacent Cache Line Prefetch [Enabled]
Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Intel Hyper Threading Technology

Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.

Active Processor Cores

Select the number of cores to enable in each processor package.

CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C3, C6 and C7 all enabled for better power saving.

Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

CPU C3 State Support

Enable C3 sleep state for lower power consumption.

CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

CPU C7 State Support

Enable C7 deep sleep state for lower power consumption.

Package C State Support

Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

Intel SpeedStep Technology

Intel SpeedStep technology is Intel's new power saving technology. Processors can switch between multiple frequencies and voltage points to enable power saving. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® 7 / 8 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.

Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.

Intel Turbo Boost Technology

Use this item to enable or disable Intel Turbo Boost Mode Technology. Turbo Boost Mode allows processor cores to run faster than marked frequency in specific conditions. The default value is [Enabled].

CPU Thermal Throttling

You may select [Enabled] to enable CPU internal thermal control mechanism to keep the CPU from overheating.

No-Execute Memory Protection

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with "No Execute (NX) Memory Protection" can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Excute Memory Protection.

Intel Virtualization Technology

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

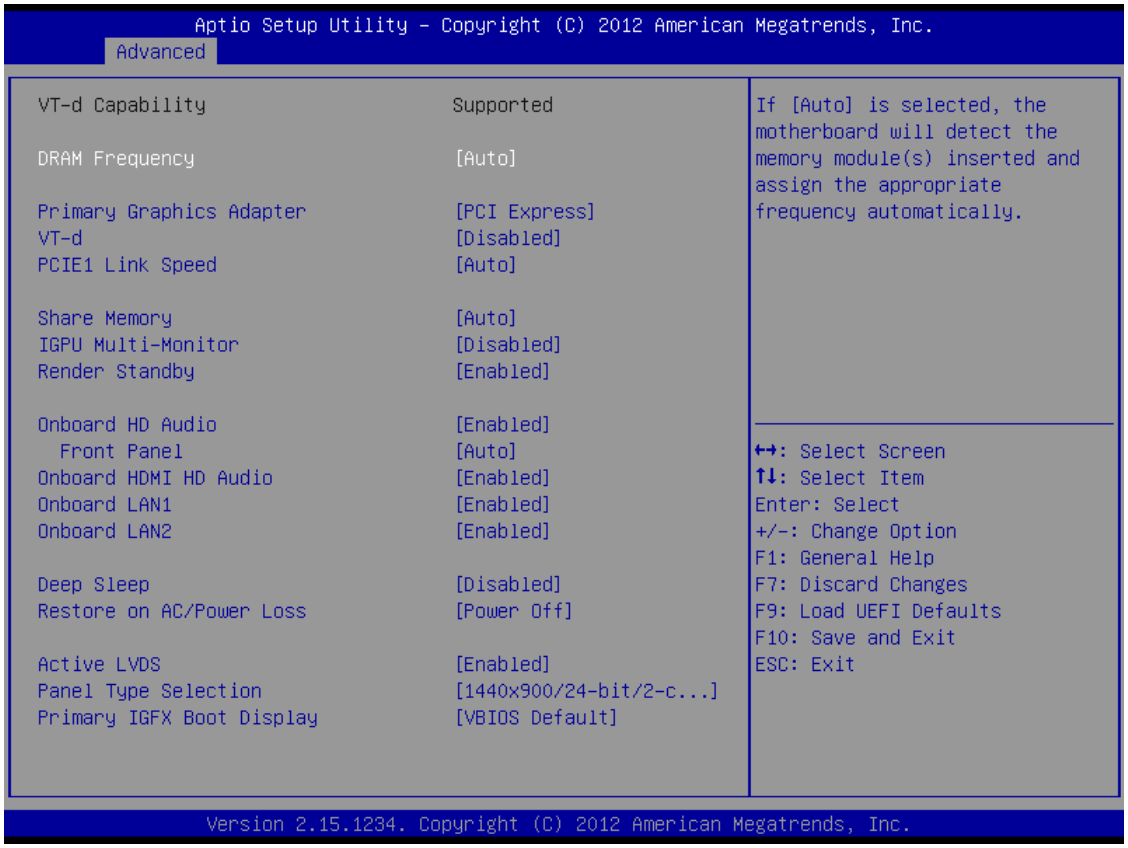
Hardware Prefetcher

Use this item to turn on/off the MLC streamer prefetcher.

Adjacent Cache Line Prefetch

Use this item to turn on/off prefetching of adjacent cache lines.

3.3.2 Chipset Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
VT-d Capability Supported
DRAM Frequency [Auto]
Primary Graphics Adapter [PCI Express]
VT-d [Disabled]
PCIE1 Link Speed [Auto]
Share Memory [Auto]
IGPU Multi-Monitor [Disabled]
Render Standby [Enabled]
Onboard HD Audio [Enabled]
Front Panel [Auto]
Onboard HDMI HD Audio [Enabled]
Onboard LAN1 [Enabled]
Onboard LAN2 [Enabled]
Deep Sleep [Disabled]
Restore on AC/Power Loss [Power Off]
Active LVDS [Enabled]
Panel Type Selection [1440x900/24-bit/2-c...]
Primary IGFX Boot Display [VBIOS Default]
If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
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DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

Primary Graphics Adapter

This allows you to select [Onboard] or [PCI Express] as the boot graphic adapter priority. The default value is [PCI Express].

VT-d

Use this to enable or disable Intel® VT-d technology (Intel® Virtualization Technology for Directed I/O). The default value of this feature is [Disabled].

PCIE1 Link Speed

Select the link speed for PCIE1.

Share Memory

Configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

IGPU Multi-Moniter

Select disable to disable the integrated graphics when an external graphics card is installed. Select enable to keep the integrated graphics enabled at all times.

Render Standby

Use this to enable or disable Render Standby by Internal Graphics Device. The default value is [Enabled].

Onboard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.

Front Panel

Select [Auto] or [Disabled] for the onboard HD Audio Front Panel.

Onboard HDMI HD Audio

This allows you to enable or disable the Onboard HDMI HD Audio feature.

Onboard LAN1

This allows you to enable or disable the Onboard LAN1 feature.

Onboard LAN2

This allows you to enable or disable the Onboard LAN2 feature.

Deep Sleep

Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. The default value is [Disabled].

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

Active LVDS

Use this to enable or disable the LVDS. The default value is [Enabled].

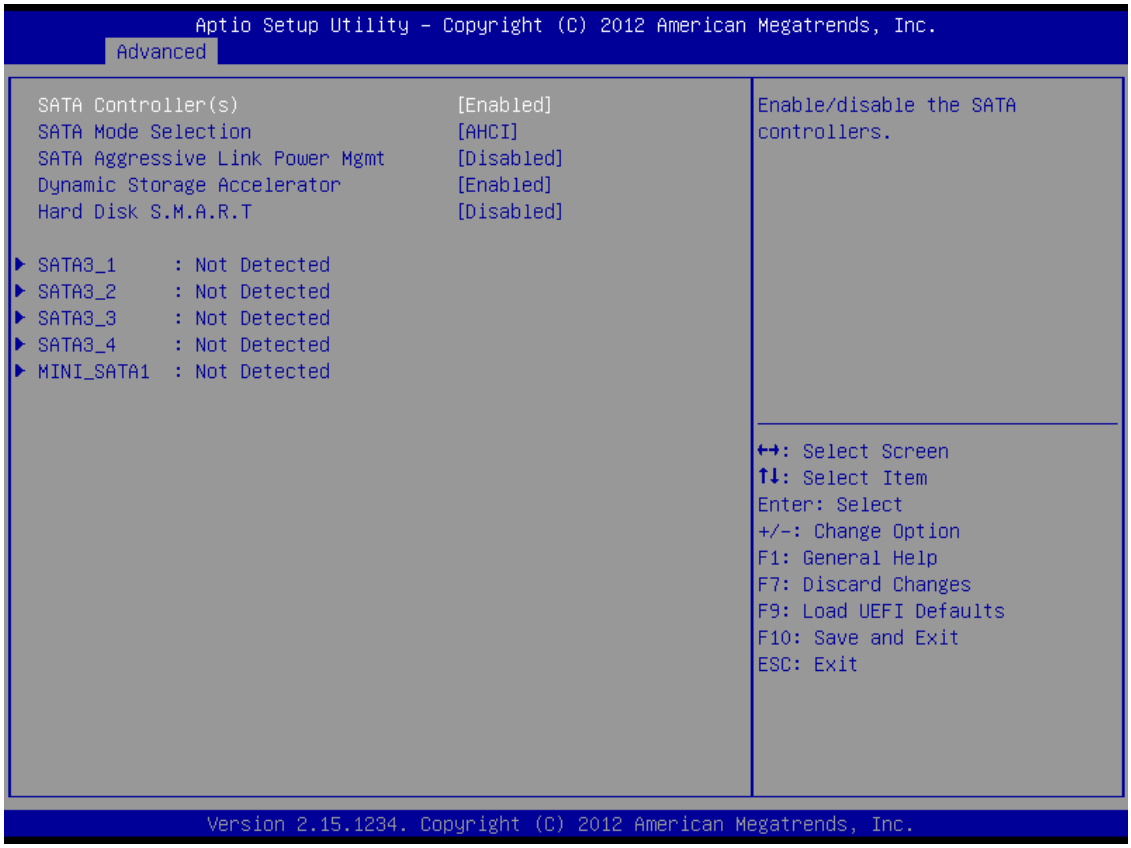
Panel Type Selection

Use this to select panel type.

Primary IGFX Boot Display

Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display. Configuration options: [VBIOS Default], [CRT], [DVI], [HDMI] and [LVDS]. The default value is [VBIOS Default].

3.3.3 Storage Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
SATA Aggressive Link Power Mgmt [Disabled]
Dynamic Storage Accelerator [Enabled]
Hard Disk S.M.A.R.T [Disabled]
SATA3_1 : Not Detected
SATA3_2 : Not Detected
SATA3_3 : Not Detected
SATA3_4 : Not Detected
MINI_SATA1 : Not Detected
Enable/disable the SATA controllers.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
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SATA Controller(s)

Use this item to enable or disable the SATA Controller feature.

SATA Mode Selection

Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode] and [RAID Mode]. The default value is [AHCI Mode].

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

SATA Aggressive Link Power Management

Use this item to configure SATA Aggressive Link Power Management.

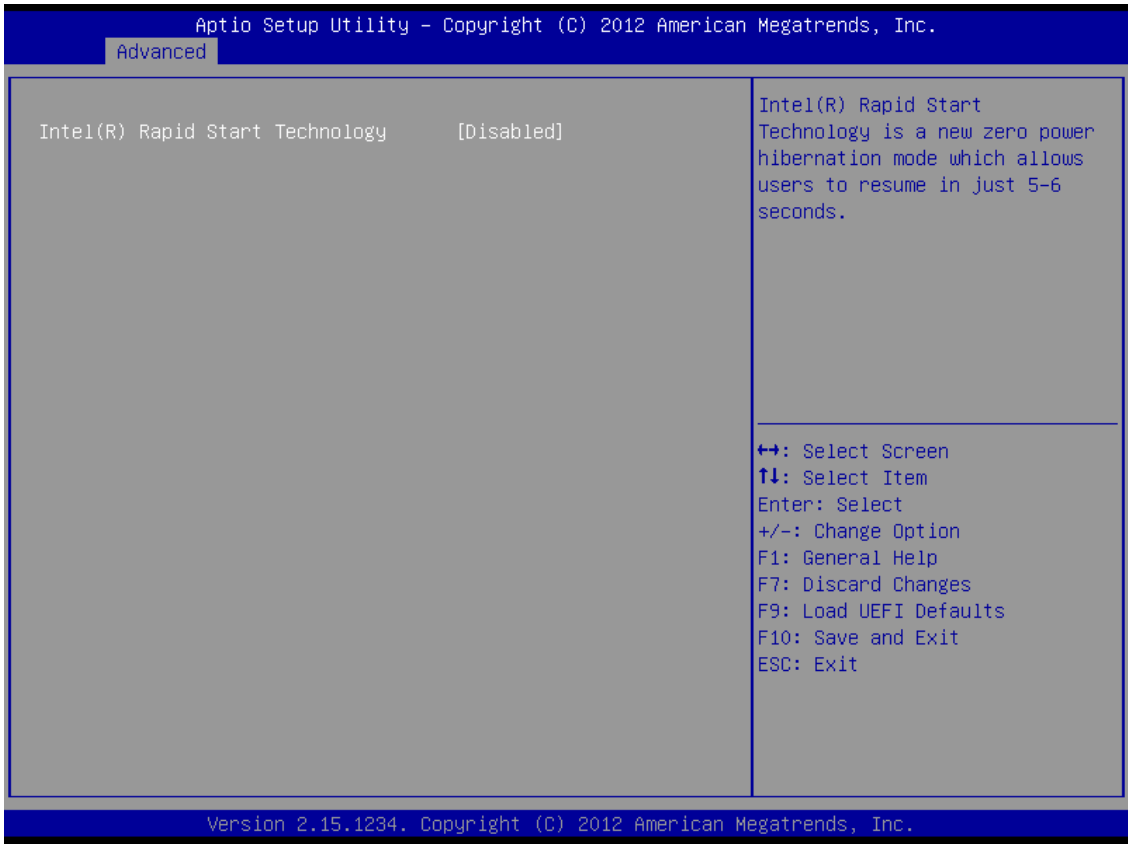
Dynamic Storage Accelerator

Keep this option enabled for higher HDD and SDD I/O performance, lower latency and increased system responsiveness.

Hard Disk S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled] and [Enabled].

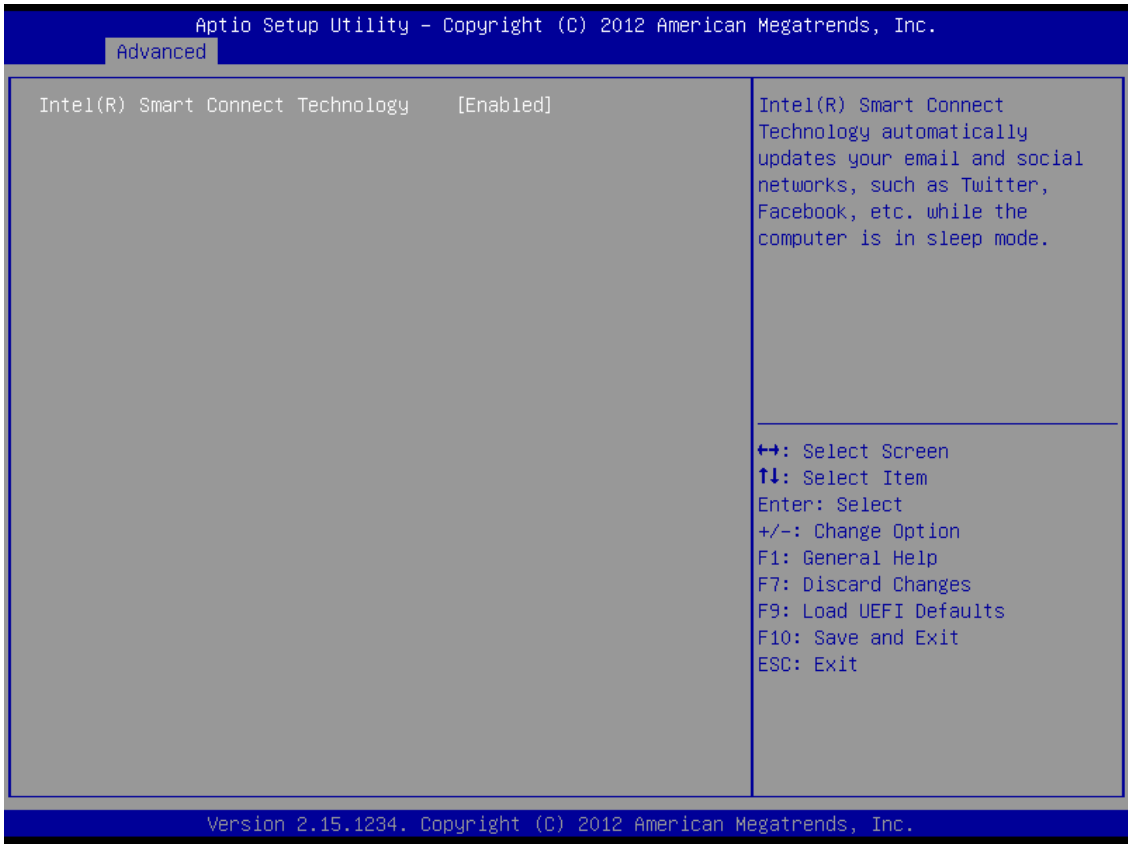
3.3.4 Intel(R) Rapid Start Technology


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel(R) Rapid Start Technology [Disabled]
Intel(R) Rapid Start Technology is a new zero power hibernation mode which allows users to resume in just 5-6 seconds.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Intel(R) Rapid Start Technology

Use this item to enable or disable Intel(R) Rapid Start Technology. Intel(R) Rapid Start Technology is a new zero power hibernation mode which allows users to resume in just 5-6 seconds. The default is [Disabled].

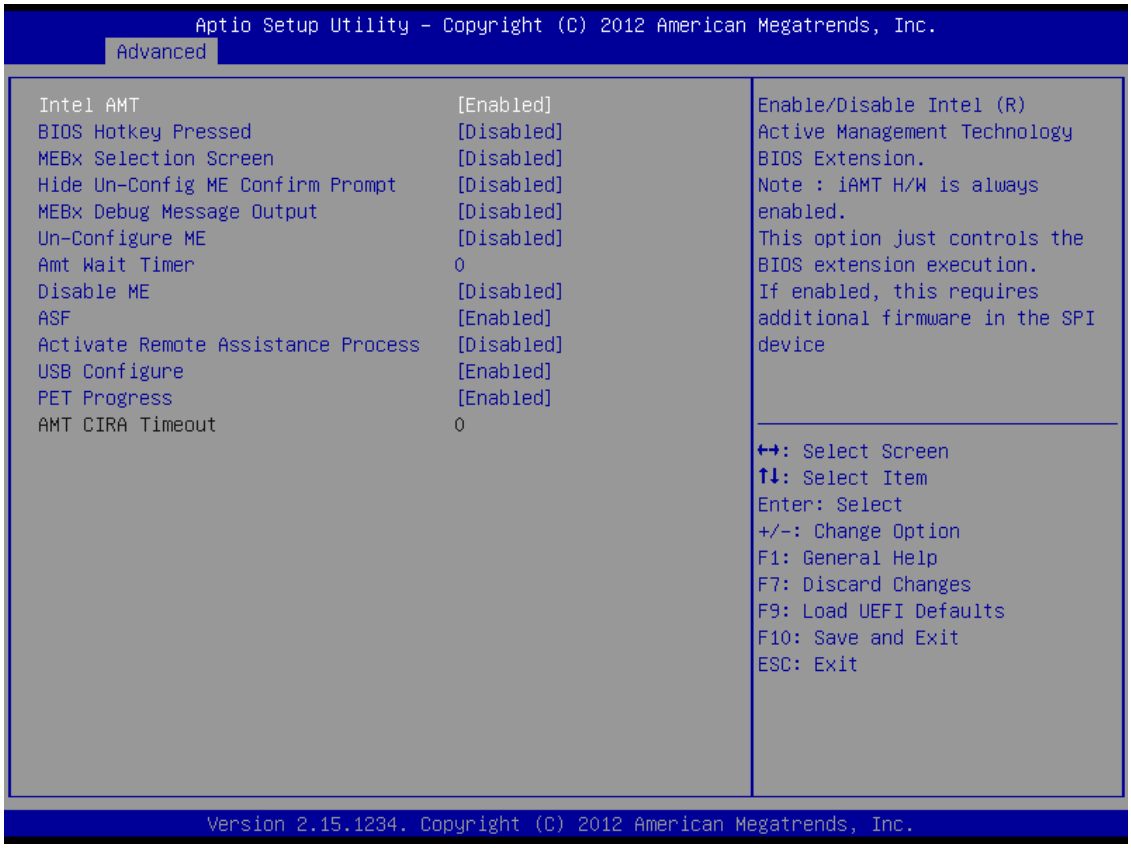
3.3.5 Intel(R) Smart Connect Technology


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel(R) Smart Connect Technology [Enabled]
Intel(R) Smart Connect Technology automatically updates your email and social networks, such as Twitter, Facebook, etc. while the computer is in sleep mode.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Intel(R) Smart Connect Technology

Use this item to enable or disable Intel(R) Smart Connect Technology. Intel(R) Smart Connect Technology keeps your e-mail and social networks, such as Twitter, Facebook, etc. updated automatically while the computer is in sleep mode. The default is [Enabled].

3.3.6 AMT Technology


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Intel AMT [Enabled]
BIOS Hotkey Pressed [Disabled]
MEBx Selection Screen [Disabled]
Hide Un-Config ME Confirm Prompt [Disabled]
MEBx Debug Message Output [Disabled]
Un-Configure ME [Disabled]
Amt Wait Timer 0
Disable ME [Disabled]
ASF [Enabled]
Activate Remote Assistance Process [Disabled]
USB Configure [Enabled]
PET Progress [Enabled]
AMT CIRA Timeout 0
Enable/Disable Intel (R) Active Management Technology BIOS Extension.
Note : iAMT H/W is always enabled.
This option just controls the BIOS extension execution.
If enabled, this requires additional firmware in the SPI device
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Intel AMT

Use this to enable or disable Intel(R) Active Management Technology BIOS Extension. The default is [Enabled].

BIOS Hotkey Pressed

Use this to enable or disable BIOS hotkey press. The default is [Disabled].

MEBx Selection Screen

Use this to enable or disable MEBx Selection Screen. The default is [Disabled].

Hide Un-Configure ME Confirmation

Hide Un-Configure ME without password confirmation prompt. The default is [Disabled].

MEBx Debug Message Output

Use this to enable or disable MEBx Debug Message Output. The default is [Disabled].

Un-Configure ME

Un-Configure ME without password. The default is [Disabled].

Amt Wait Timer

Set timer to wait before sending ASF_GET_BOOT_OPTIONS.

Disable ME

Set ME to Soft Temporary Disabled. The default is [Disabled].

ASF

Use this to enable or disable Alert Specification Format. The default is [Enabled].

Activate Remote Assistance Process

Trigger CIRA boot. The default is [Disabled].

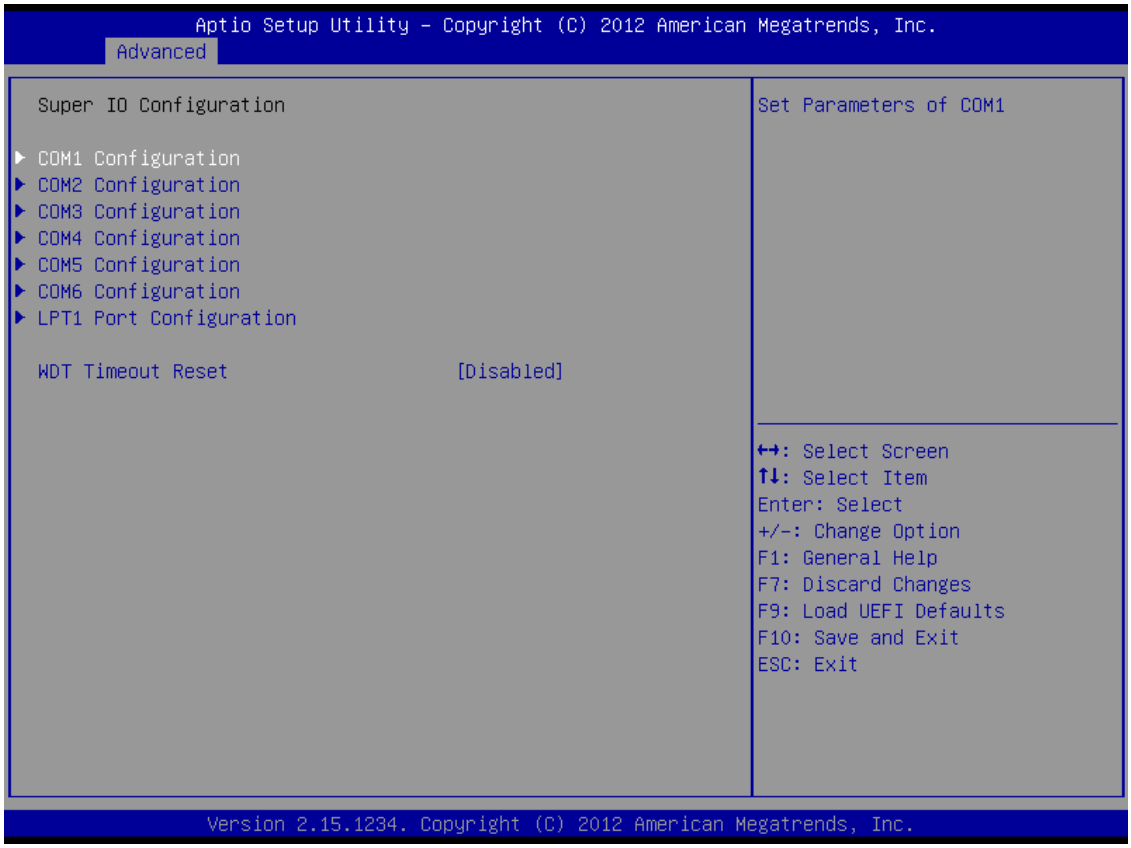
USB Configure

Use this to enable or disable USB Configure function. The default is [Enabled].

PET Progress

User can enable or disable PET Events progress to receive PET events or not. The default is [Enabled].

3.3.7 Super IO Configuration



COM1 Configuration

Use this to set parameters of COM1.

COM2 Configuration

Use this to set parameters of COM2.

COM3 Configuration

Use this to set parameters of COM3.

COM4 Configuration

Use this to set parameters of COM4.

COM5 Configuration

Use this to set parameters of COM5.

COM6 Configuration

Use this to set parameters of COM6.

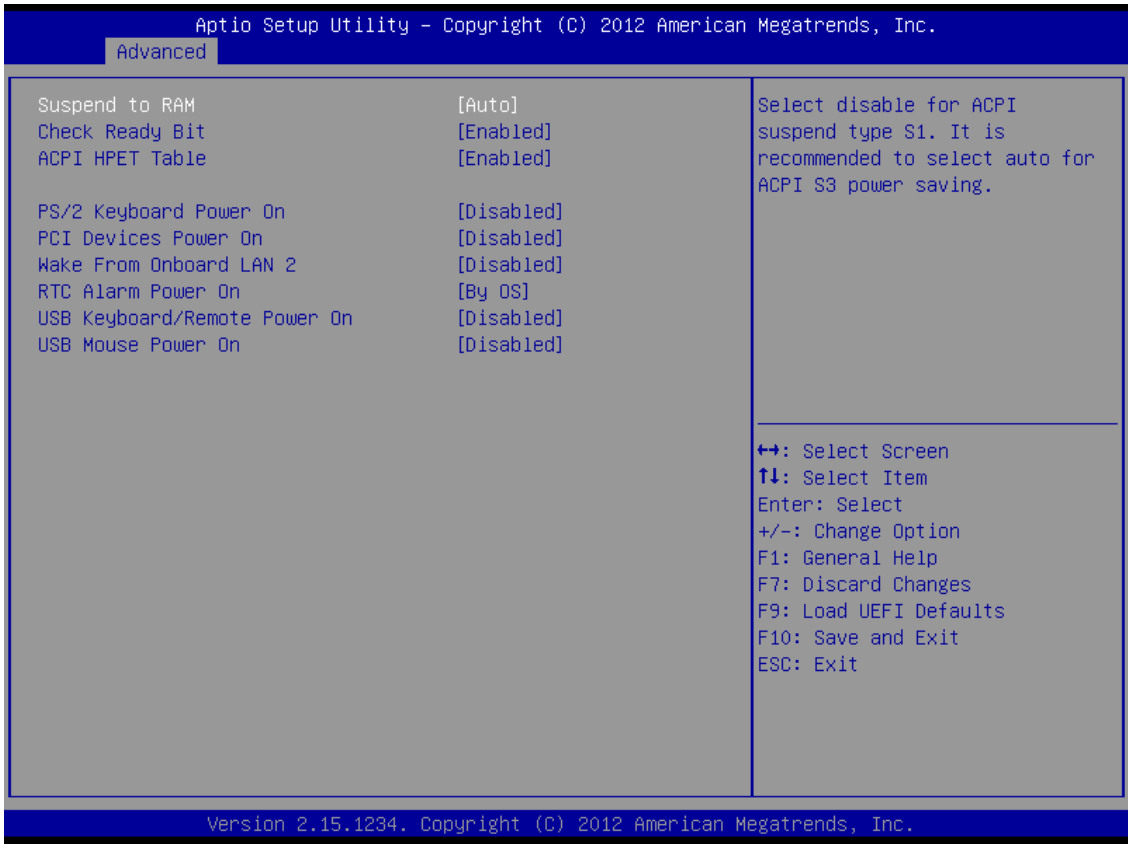
LPT1 Port Configuration

Use this set parameters of the onboard parallel port.

WDT Timeout Reset

This allows users to enable/disable the Watch Dog Timer timeout to reset system. The default value is [Disabled].

3.3.8 ACPI Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
Suspend to RAM [Auto]
Check Ready Bit [Enabled]
ACPI HPET Table [Enabled]
PS/2 Keyboard Power On [Disabled]
PCI Devices Power On [Disabled]
Wake From Onboard LAN 2 [Disabled]
RTC Alarm Power On [By OS]
USB Keyboard/Remote Power On [Disabled]
USB Mouse Power On [Disabled]
Select disable for ACPI suspend type S1. It is recommended to select auto for ACPI S3 power saving.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Suspend to RAM

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it.

Check Ready Bit

Use this item to enable or disable the feature Check Ready Bit.

ACPI HPET Table

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® certification.

PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

Wake From Onboard LAN 2

Use this item to enable or disable the Wake From Onboard LAN 2 feature.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

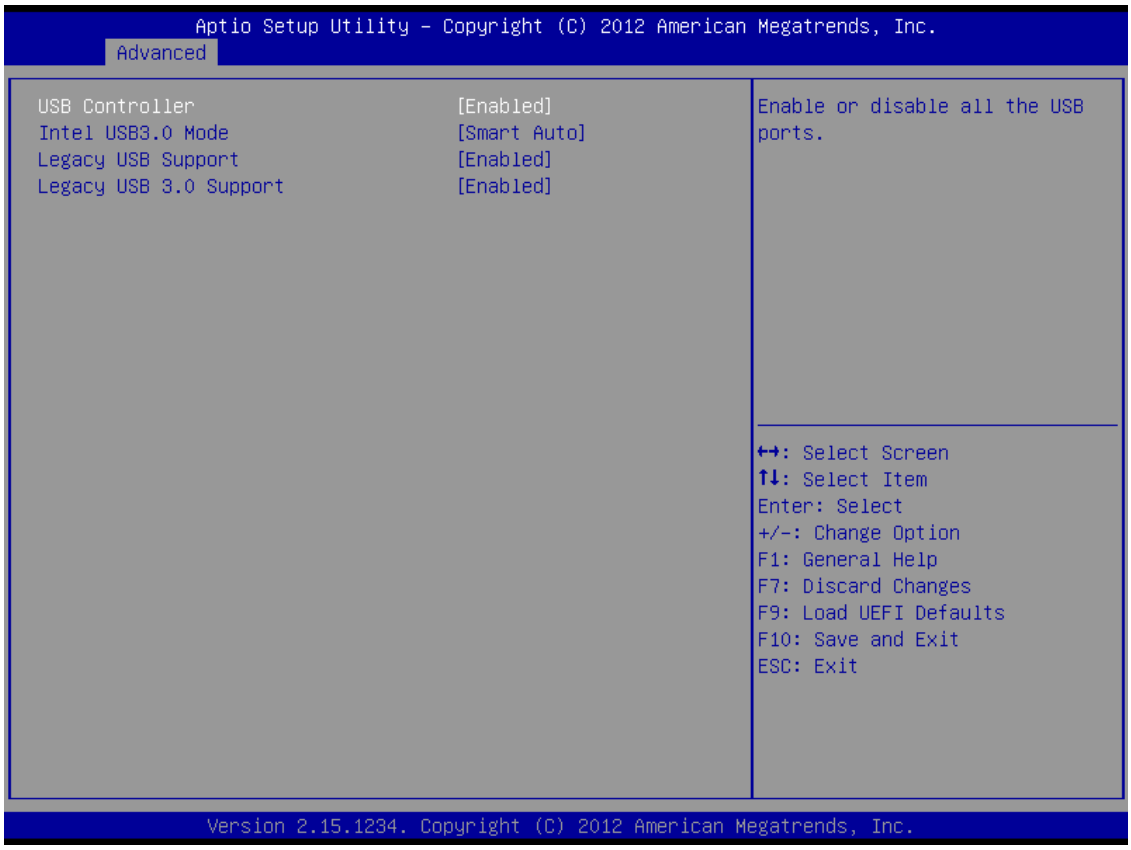
USB Keyboard/Remote Power On

Use this item to enable or disable USB Keyboard/Remote to power on the system.

USB Mouse Power On

Use this item to enable or disable USB Mouse to power on the system.

3.3.9 USB Configuration


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Advanced
USB Controller [Enabled]
Intel USB3.0 Mode [Smart Auto]
Legacy USB Support [Enabled]
Legacy USB 3.0 Support [Enabled]
Enable or disable all the USB ports.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

USB Controller

Use this item to enable or disable the use of USB controller.

Intel USB 3.0 Mode

Use this item to enable or disable the use of Intel USB 3.0 mode.

Legacy USB Support

Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to below descriptions for the details of these four options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

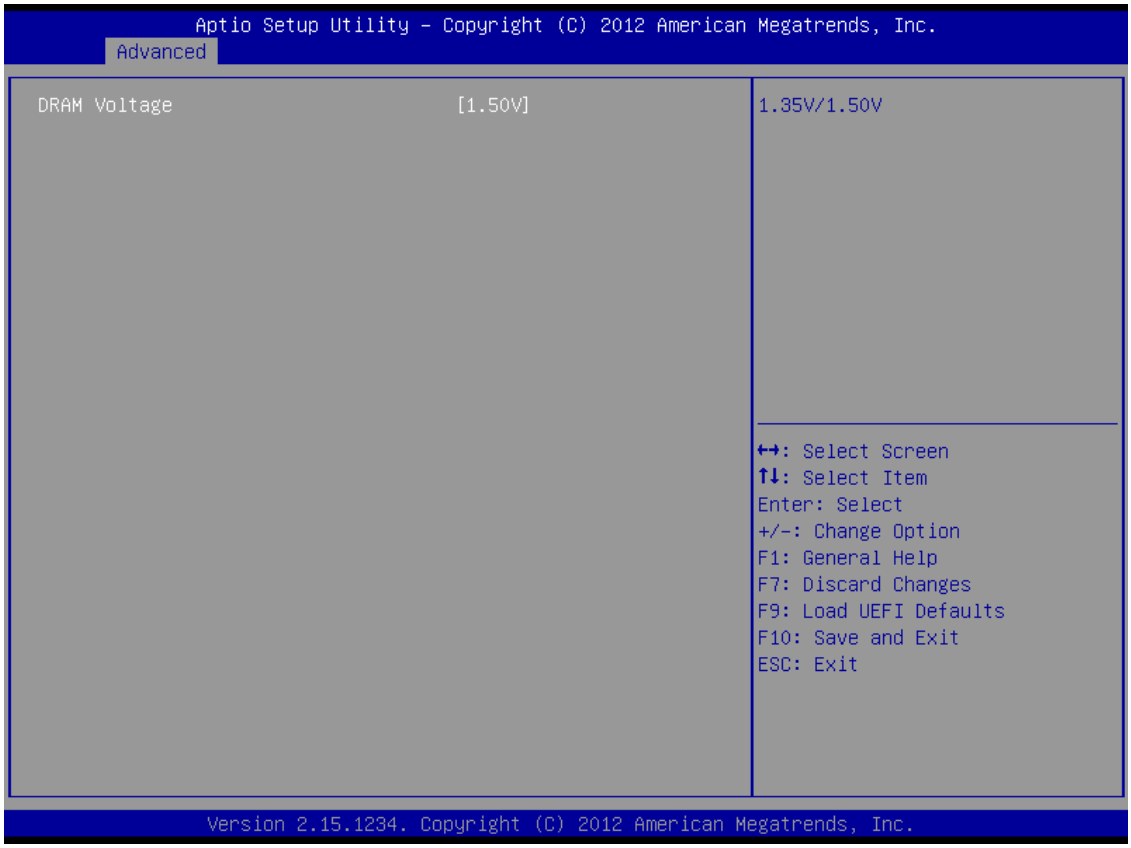
[Disabled] - USB devices are not allowed to use under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issues, it is recommended to select [Disabled] to enter OS.

[UEFI Setup Only] - USB devices are allowed to use only under UEFI setup and Windows / Linux OS.

Legacy USB 3.0 Support

Use this option to enable or disable legacy support for USB 3.0 devices. The default value is [Enabled].

3.3.10 Voltage Configuration

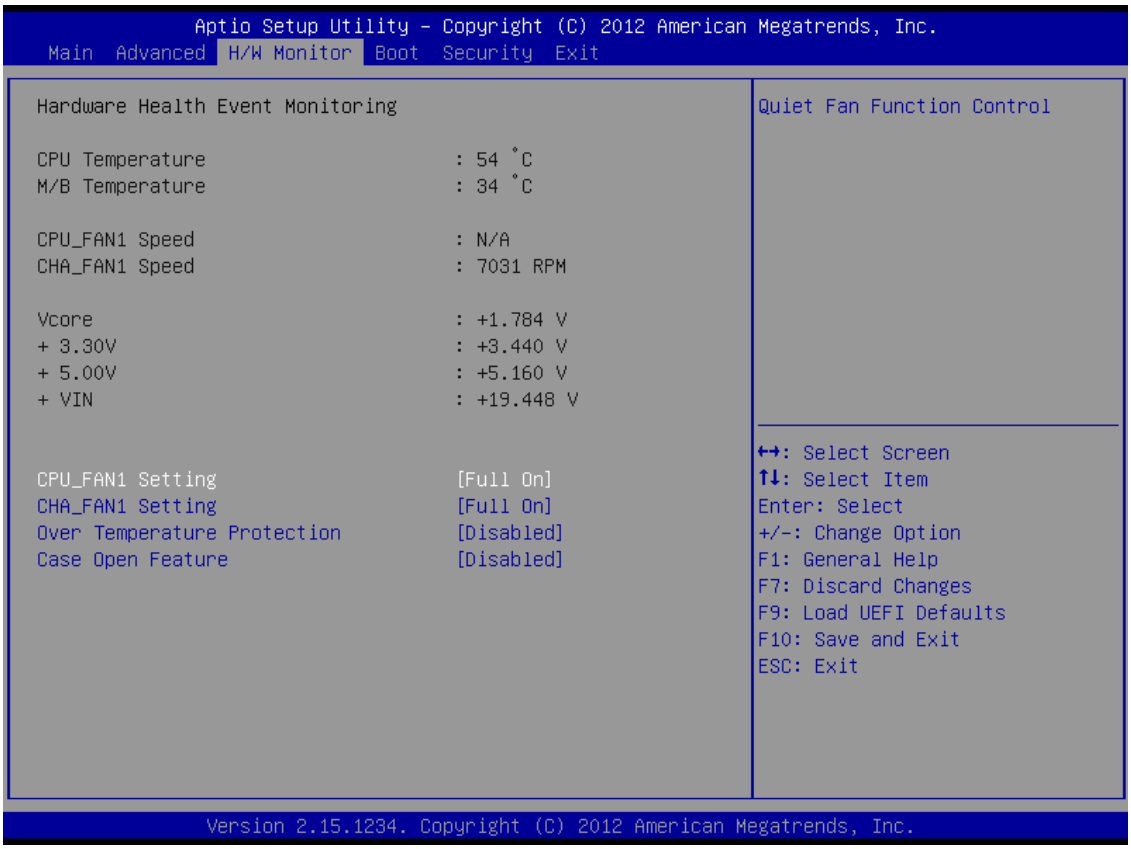


DRAM Voltage

Use this to select DRAM Voltage. The default value is [Auto].

3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
Hardware Health Event Monitoring
CPU Temperature : 54 °C
M/B Temperature : 34 °C
CPU_FAN1 Speed : N/A
CHA_FAN1 Speed : 7031 RPM
Vcore : +1.784 V
+ 3.30V : +3.440 V
+ 5.00V : +5.160 V
+ VIN : +19.448 V
CPU_FAN1 Setting [Full On]
CHA_FAN1 Setting [Full On]
Over Temperature Protection [Disabled]
Case Open Feature [Disabled]
Quiet Fan Function Control
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

CPU_FAN1 Setting

This allows you to set CPU fan 1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

CHA_FAN1 Setting

This allows you to set chassis fan 1's speed. Configuration options: [Full On] and [Automatic Mode]. The default value is [Full On].

Over Temperature Protection

Use this to enable or disable Over Temperature Protection. The default value is [Enabled].

Case Open Feature

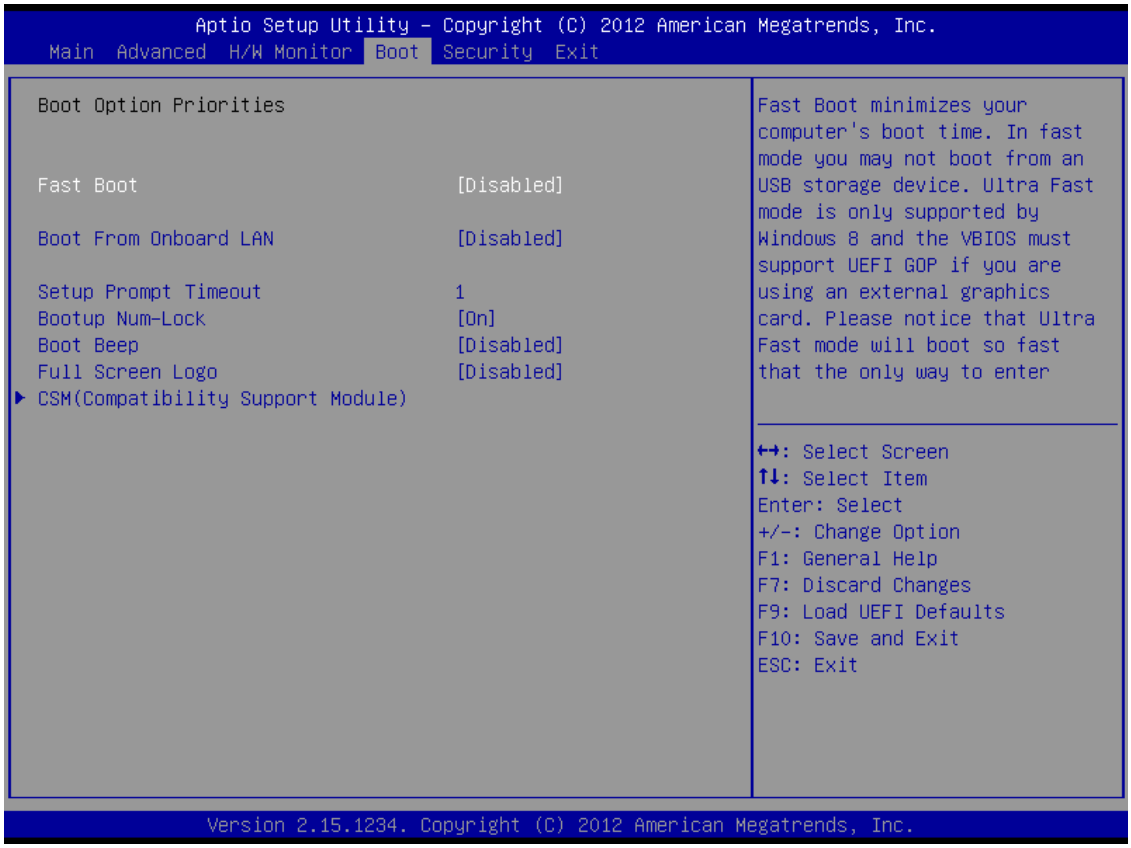
This allows you to enable or disable case open detection feature. The default is value [Disabled].

Clear Status

This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

3.5 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
Boot Option Priorities
Fast Boot [Disabled]
Boot From Onboard LAN [Disabled]
Setup Prompt Timeout 1
Bootup Num-Lock [On]
Boot Beep [Disabled]
Full Screen Logo [Disabled]
CSM(Compatibility Support Module)
Fast Boot minimizes your computer's boot time. In fast mode you may not boot from an USB storage device. Ultra Fast mode is only supported by Windows 8 and the VBIOS must support UEFI GOP if you are using an external graphics card. Please notice that Ultra Fast mode will boot so fast that the only way to enter
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Fast Boot

Fast Boot minimizes your computer's boot time. There are three configuration options: [Disabled], [Fast] and [Ultra Fast]. The default value is [Disabled]. Please refer to below descriptions for the details of these three options:

[Disabled] - Disable Fast Boot.

[Fast] - The only restriction is you may not boot by using an USB flash drive.

[Ultra Fast] - There are a few restrictions.

1. Only supports Windows® 8 UEFI operating system.
2. You will not be able to enter BIOS Setup (Clear CMOS or run utility in Widows® to enter BIOS Setup).
3. If you are using an external graphics card, the VBIOS must support UEFI GOP in order to boot.

Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

Setup Prompt Timeout

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

Bootup Num-Lock

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

Full Screen Logo

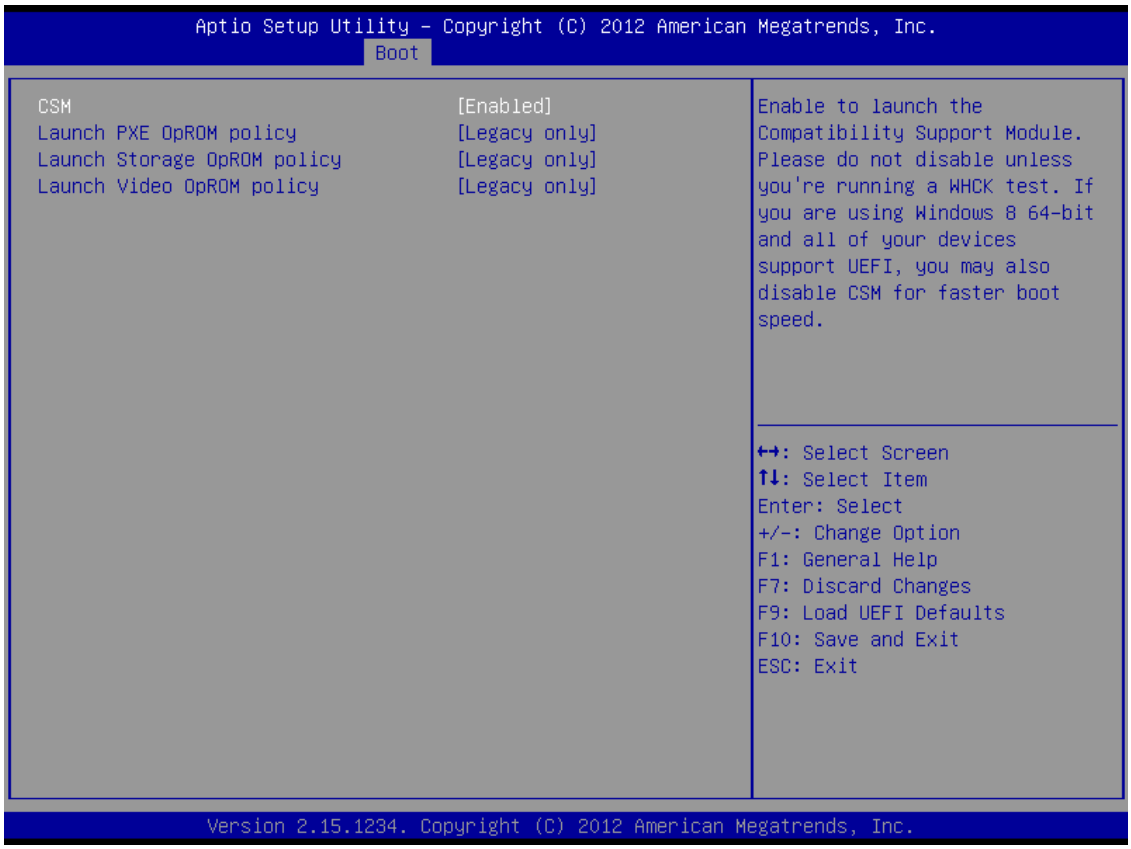
Use this item to enable or disable OEM Logo. The default value is [Enabled].

AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the option “Full Screen Logo” but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

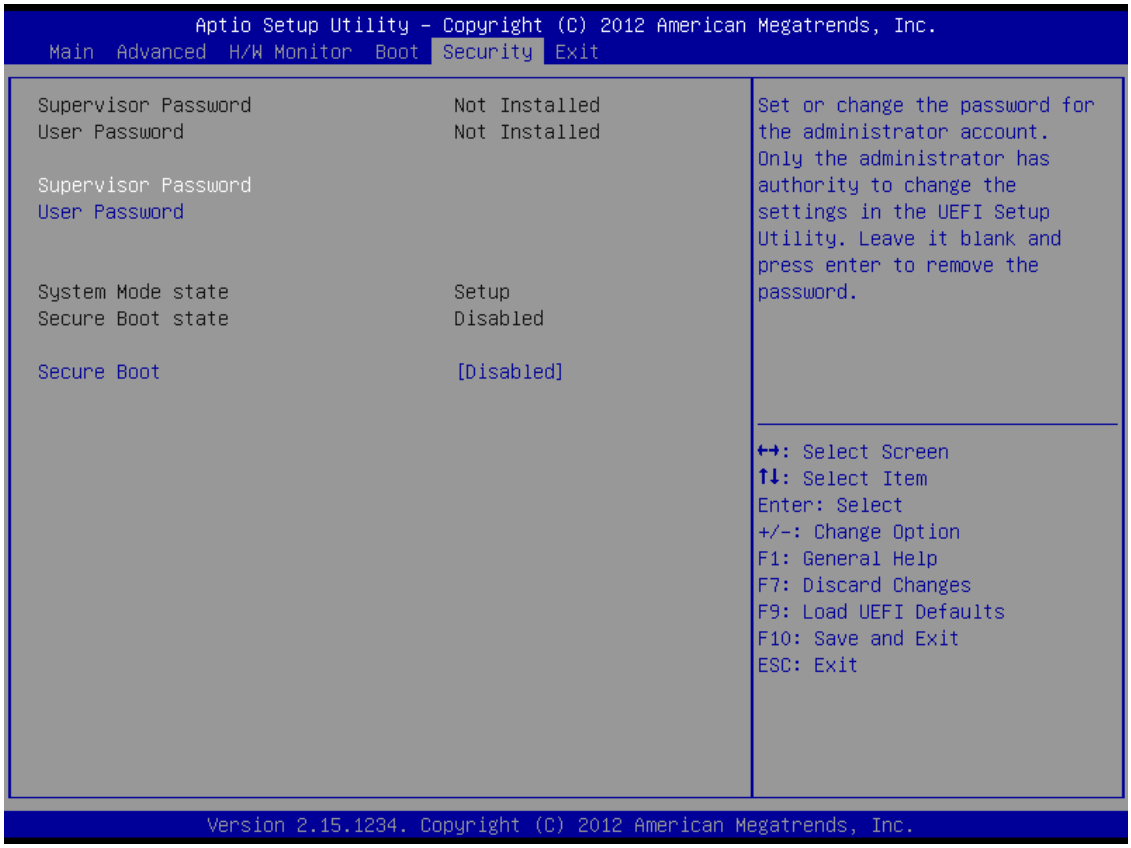
CSM

Please disable CSM when you enable Fast Boot option. The default value is [Enabled].


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Boot
CSM [Enabled]
Launch PXE OpROM policy [Legacy only]
Launch Storage OpROM policy [Legacy only]
Launch Video OpROM policy [Legacy only]
Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows 8 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

3.6 Security Screen

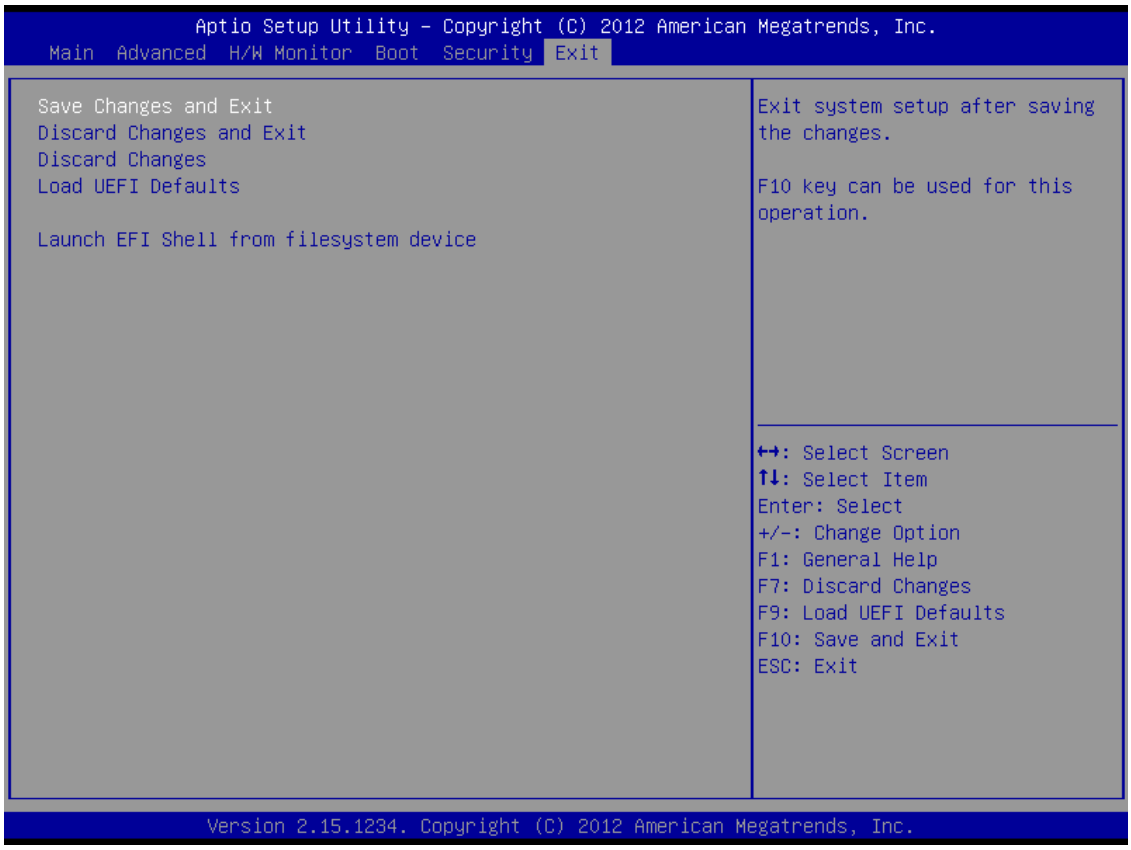
In this section, you may set, change or clear the supervisor/user password for the system.


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
Supervisor Password Not Installed
User Password Not Installed
Supervisor Password
User Password
System Mode state Setup
Secure Boot state Disabled
Secure Boot [Disabled]
Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Secure Boot

Use this to enable or disable Secure Boot. The default value is [Disabled].

3.7 Exit Screen


Aptio Setup Utility – Copyright (C) 2012 American Megatrends, Inc.
Main Advanced H/W Monitor Boot Security Exit
Save Changes and Exit
Discard Changes and Exit
Discard Changes
Load UEFI Defaults
Launch EFI Shell from filesystem device
Exit system setup after saving the changes.
F10 key can be used for this operation.
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.15.1234. Copyright (C) 2012 American Megatrends, Inc.

Save Changes and Exit

When you select this option, it will pop-out the following message, “Save configuration changes and exit setup?” Select [OK] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option, it will pop-out the following message, “Discard changes and exit setup?” Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option, it will pop-out the following message, “Discard changes?” Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shell64.efi) from one of the available filesystem devices.

Chapter 4 Software Support

4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 8 / 8 64-bit / 7 / 7 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASRSetup.exe" from the BIN folder in the Support CD to display the menus.

4.2.2 Drivers Menu

The Drivers Menu shows the available device's drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

4.2.3 Utilities Menu

The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

4.2.4 Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at http://www.asrock.com; or you may contact your dealer for further information.

Chapter 5 Installation of Drivers

This chapter describes the installation procedures for software and drivers under the windows 7 and Windows 8. The software and drivers are included with the motherboard. The contents include **Intel Chipset Driver, VGA Drivers, LAN Driver, Audio Driver, USB 3.0 Driver, Smart Connect Technology Driver, and iAMT Driver. Installation instructions are given below.**

Important Note:
After installing your Windows operating system (Windows 7/8), you must install first the Intel Chipset Software Installation Utility before proceeding with the installation of drivers.

5.1 Intel Chipset Driver

To install the Intel Chipset Driver, please follow the steps below.

Step 1. Select **Intel (R) Chipset QM87 Driver** from the list

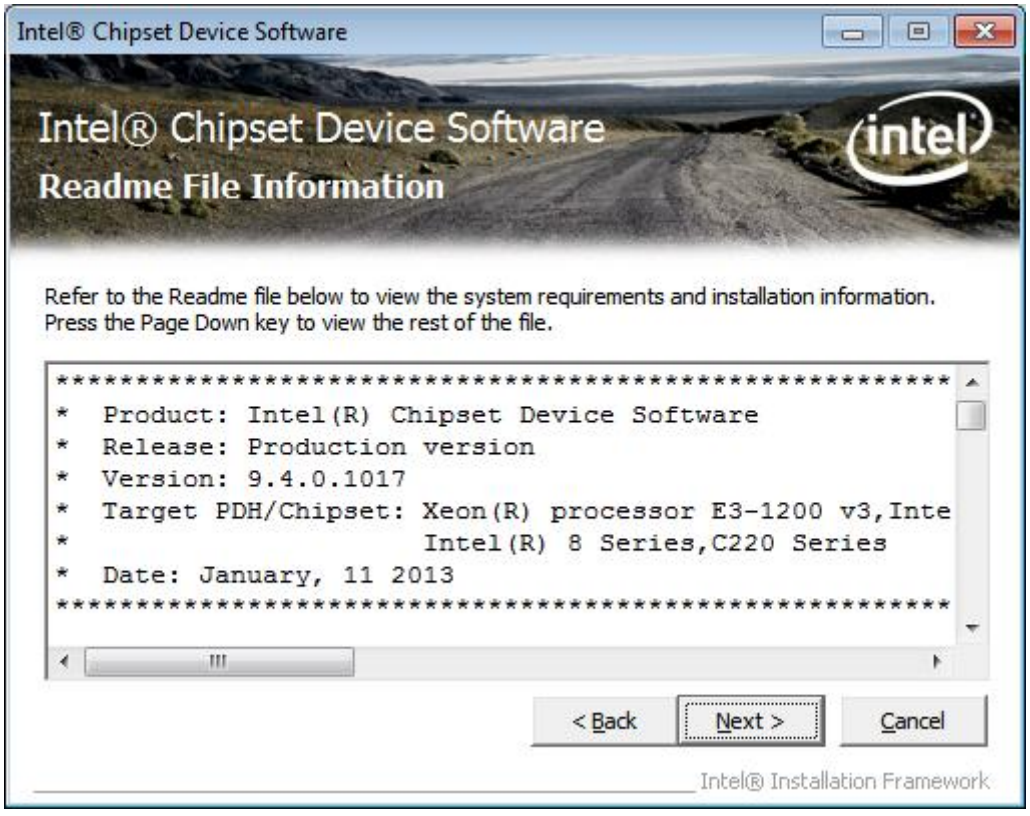
Step 2. Click **Next** to setup program.

Intel® Chipset Device Software
Intel® Chipset Device Software
intel
Welcome to the Setup Program
This setup program will install the Intel® Chipset Device Software onto this computer. It is strongly recommended that you exit all programs before continuing.
< Back
Next >
Cancel
Intel® Installation Framework

Step 3. Read the license agreement. Click **Yes** to accept all of the terms of the license agreement.

Intel® Chipset Device Software
Intel® Chipset Device Software
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
< Back
Yes
No
Intel® Installation Framework

Step 4. Click **Next** to continue.


Intel® Chipset Device Software
Intel® Chipset Device Software
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Press the Page Down key to view the rest of the file.
****
* Product: Intel(R) Chipset Device Software
* Release: Production version
* Version: 9.4.0.1017
* Target PDH/Chipset: Xeon(R) processor E3-1200 v3,Inte
* Intel(R) 8 Series,C220 Series
* Date: January, 11 2013
****
< Back
Next >
Cancel
Intel® Installation Framework

Step 5. Click **Next**.

Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Progress
Please wait while the following setup operations are performed:
Installing Driver: Intel(R) 8 Series 2 port Serial ATA Storage Controller - 8C09
Version: 9.4.0.1017
Installing Driver: Intel(R) 8 Series/C220 Series SMBus Controller - 8C22
Version: 9.4.0.1017
Installing Driver: Intel(R) 8 Series/C220 Series USB EHCI #1 - 8C26
Version: 9.4.0.1017
Installing Driver: Intel(R) 8 Series/C220 Series USB EHCI #2 - 8C2D
Version: 9.4.0.1017
Click Next to continue.
Next
Intel® Installation Framework

Step 6. Select **Yes, I want to restart this computer now**. Click **Finish**, then remove any installation media from the drives.

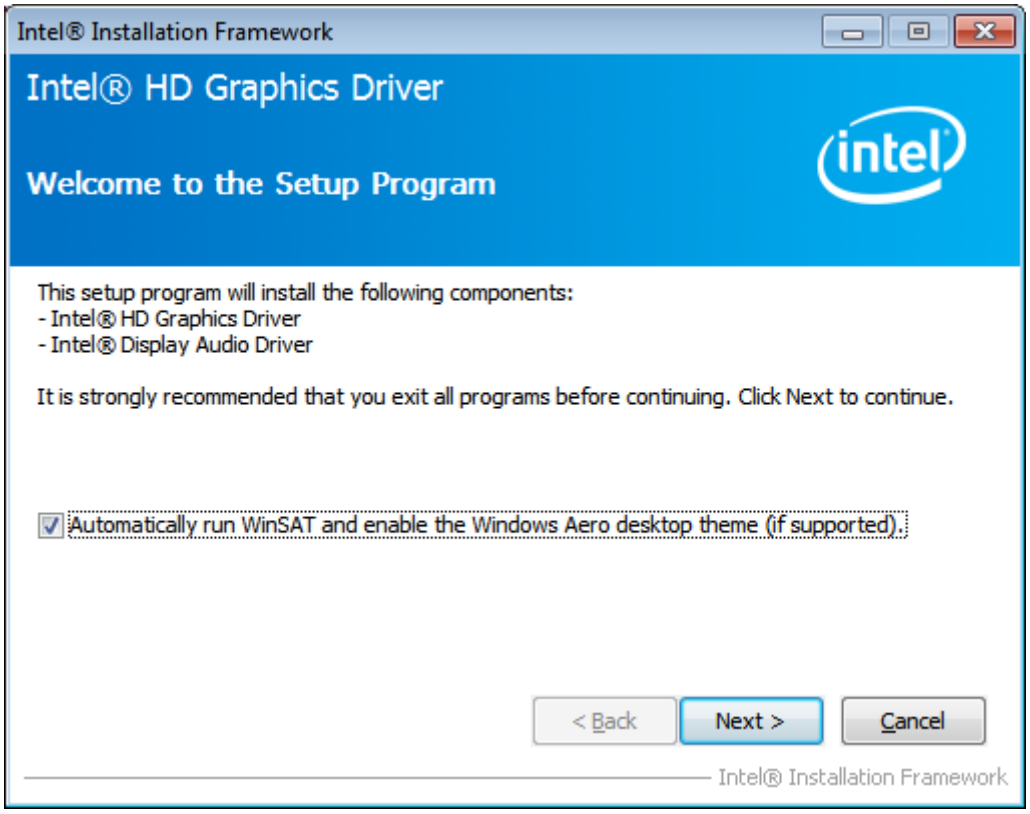
Intel® Chipset Device Software
Intel® Chipset Device Software
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

5.2 Intel Graphics Media Accelerator Driver

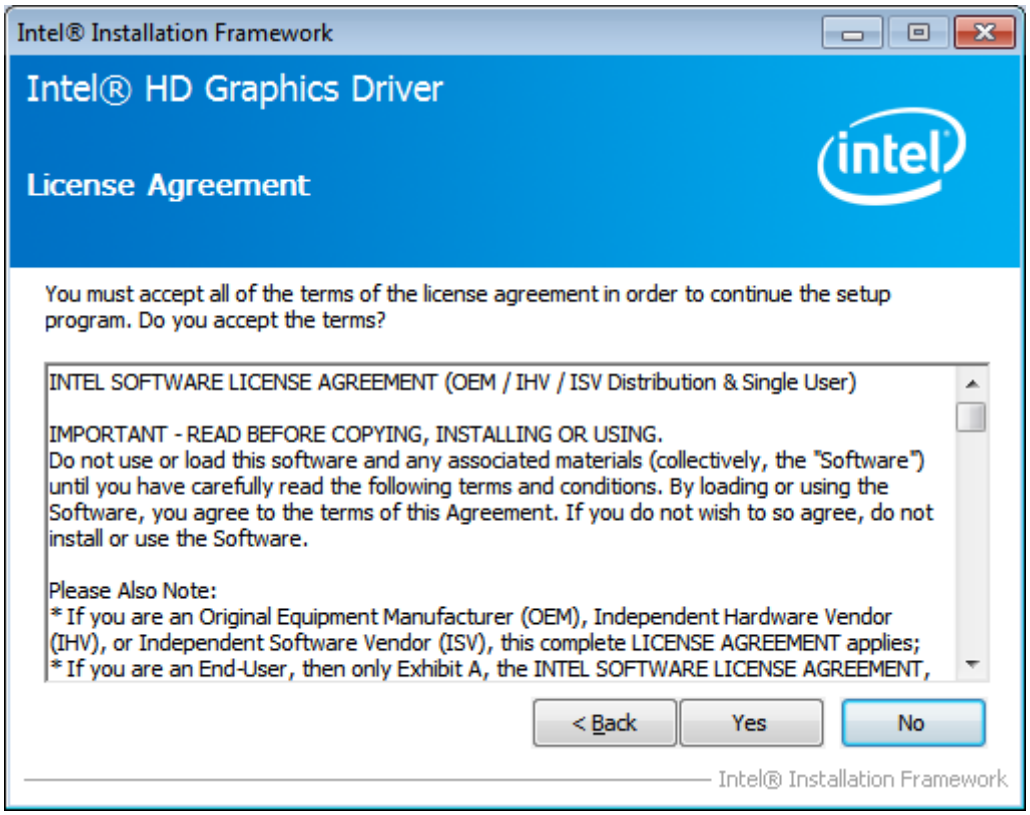
To install the VGA drivers, follow the steps below to proceed with the installation.

Step 1.Select **Intel(R) HD Graphics Driver.**

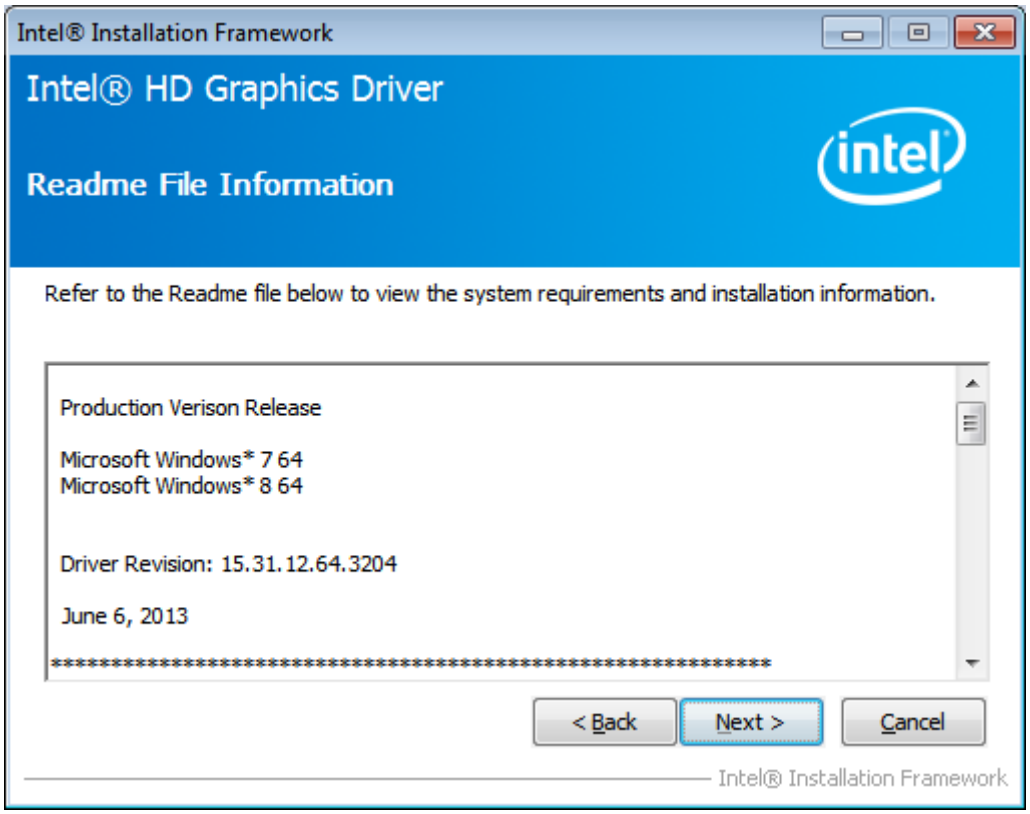
Step 2. Tick Automatically run WinSAT and enable the Windows Aero desktop theme(if supported). Click **Next**.


Intel® Installation Framework
Intel® HD Graphics Driver
Welcome to the Setup Program
intel
This setup program will install the following components:
- Intel® HD Graphics Driver
- Intel® Display Audio Driver
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Automatically run WinSAT and enable the Windows Aero desktop theme (if supported).
< Back
Next >
Cancel
Intel® Installation Framework

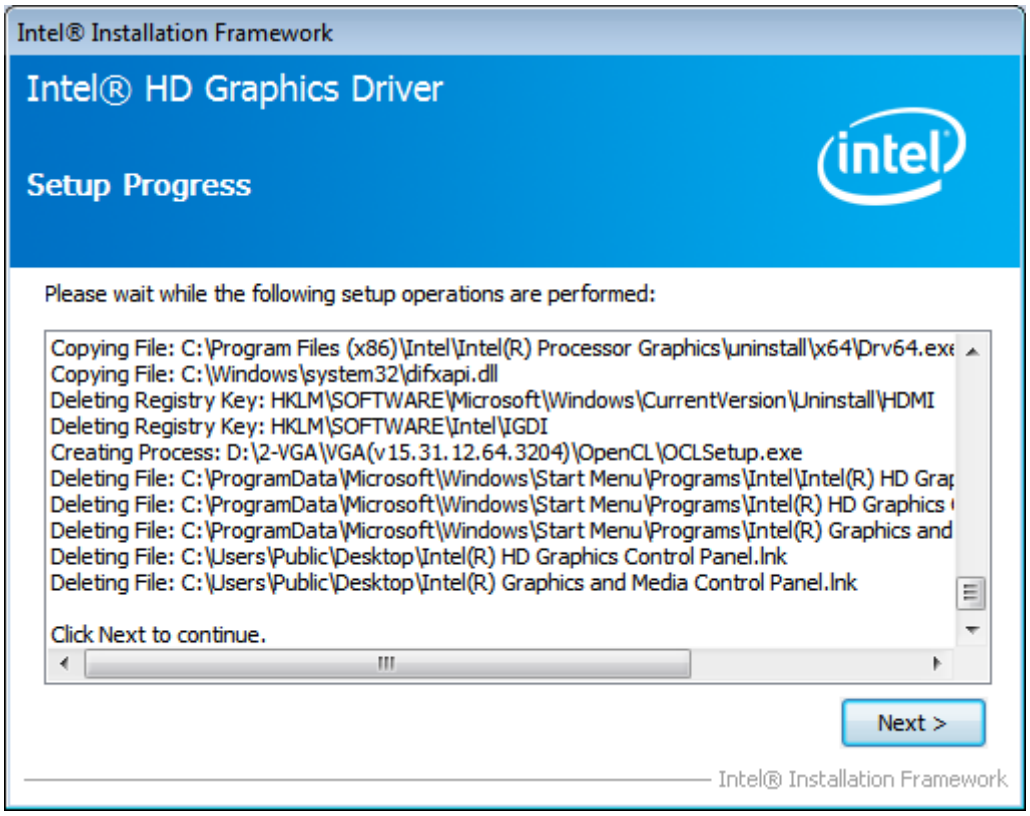
Step 3. Read license agreement**.** Click **Yes.**


Intel® Installation Framework
Intel® HD Graphics Driver
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

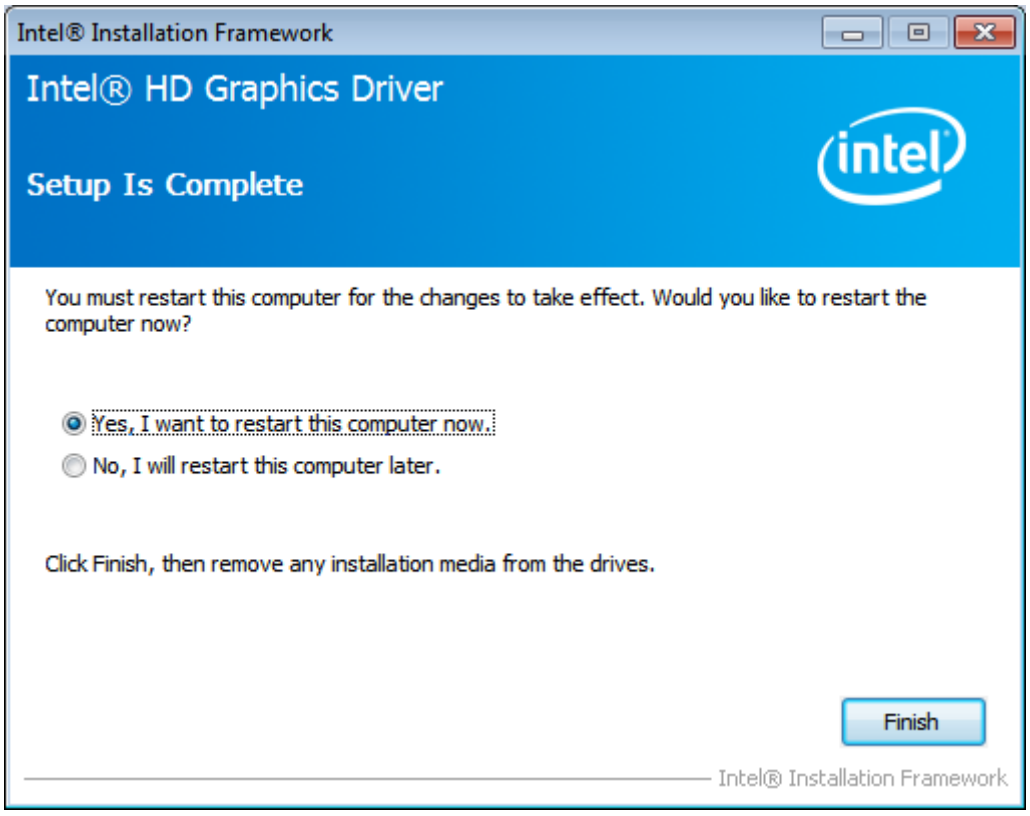
Step 4. Click **Next**.


Intel® Installation Framework
Intel® HD Graphics Driver
Readme File Information
Refer to the Readme file below to view the system requirements and installation information.
Production Verison Release
Microsoft Windows* 7 64
Microsoft Windows* 8 64
Driver Revision: 15.31.12.64.3204
June 6, 2013
< Back
Next >
Cancel
Intel® Installation Framework

Step 5. Click **Next**.


Intel® Installation Framework
Intel® HD Graphics Driver
Setup Progress
Please wait while the following setup operations are performed:
Copying File: C:\Program Files (x86)\Intel\Intel(R) Processor Graphics\uninstall\x64\Drv64.exe
Copying File: C:\Windows\system32\difxapi.dll
Deleting Registry Key: HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall\HDMI
Deleting Registry Key: HKLM\SOFTWARE\Intel\IGDI
Creating Process: D:\2-VGA\VGA(v15.31.12.64.3204)\OpenCL\OCLSetup.exe
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel\Intel(R) HD Grap
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) HD Graphics
Deleting File: C:\ProgramData\Microsoft\Windows\Start Menu\Programs\Intel(R) Graphics and
Deleting File: C:\Users\Public\Desktop\Intel(R) HD Graphics Control Panel.lnk
Deleting File: C:\Users\Public\Desktop\Intel(R) Graphics and Media Control Panel.lnk
Click Next to continue.
Next >
Intel® Installation Framework

Step 6. Select **Yes, I want to restart this computer now.** Click **Finish**.

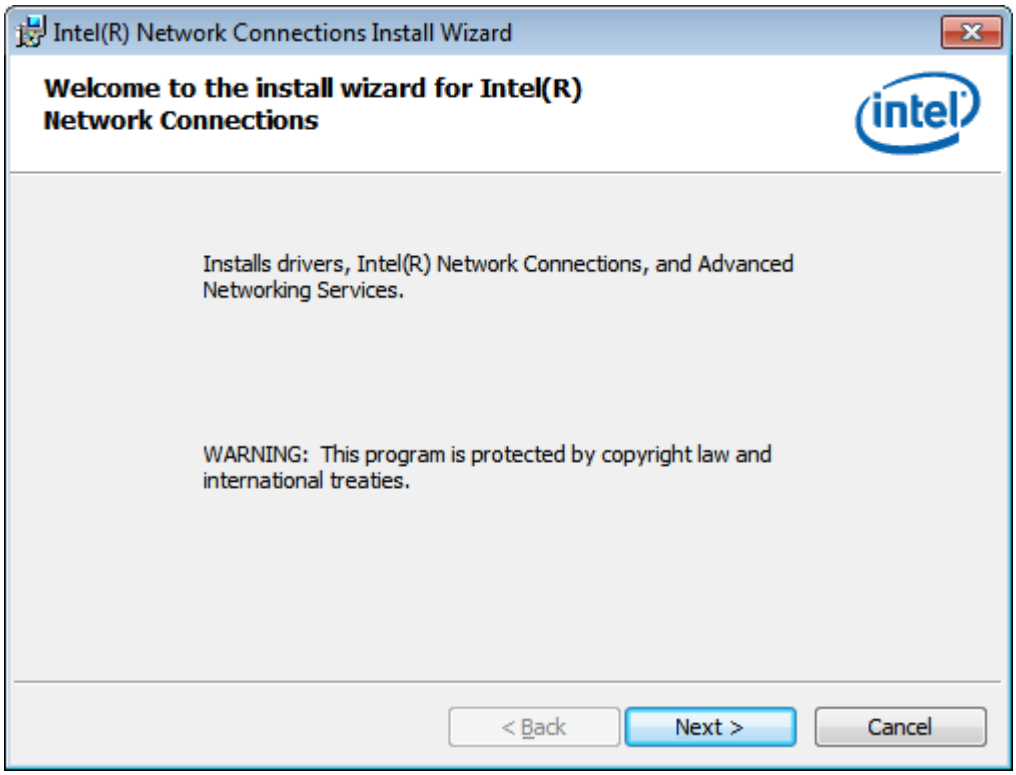

Intel® Installation Framework
Intel® HD Graphics Driver
Setup Is Complete
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

5.3 Intel (R) Network Adapter

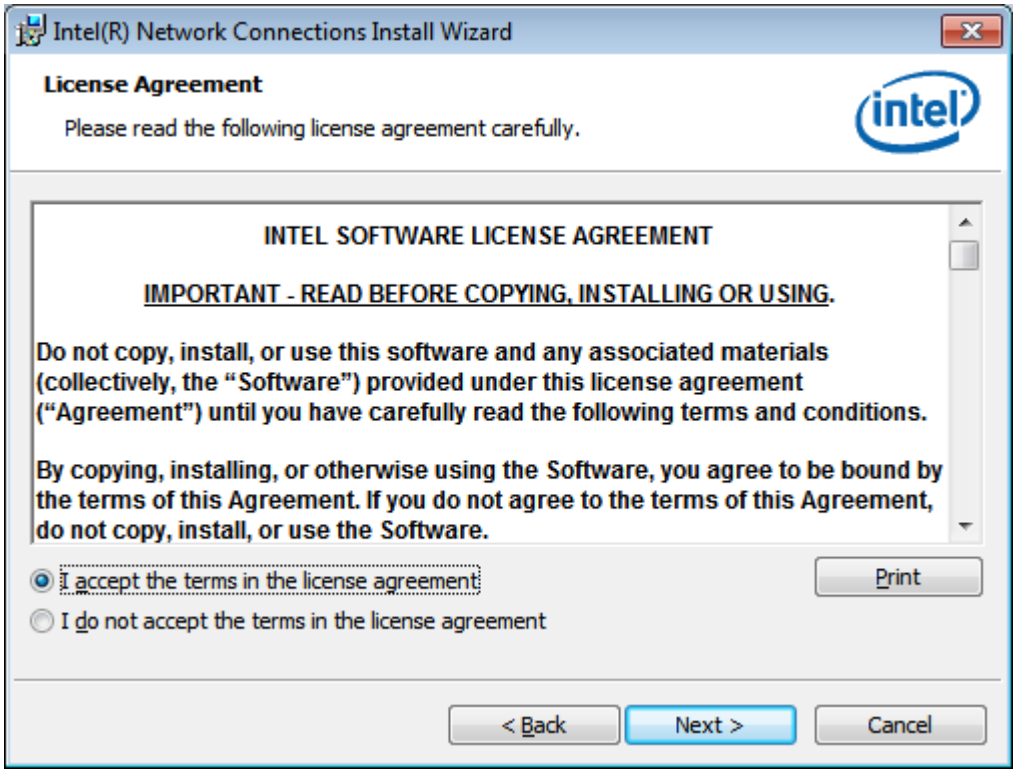
To install the Intel (R) Network Adapter Device Driver, please follow the steps below.

Step 1. Select **Intel (R) Network Adapter Realtek.**

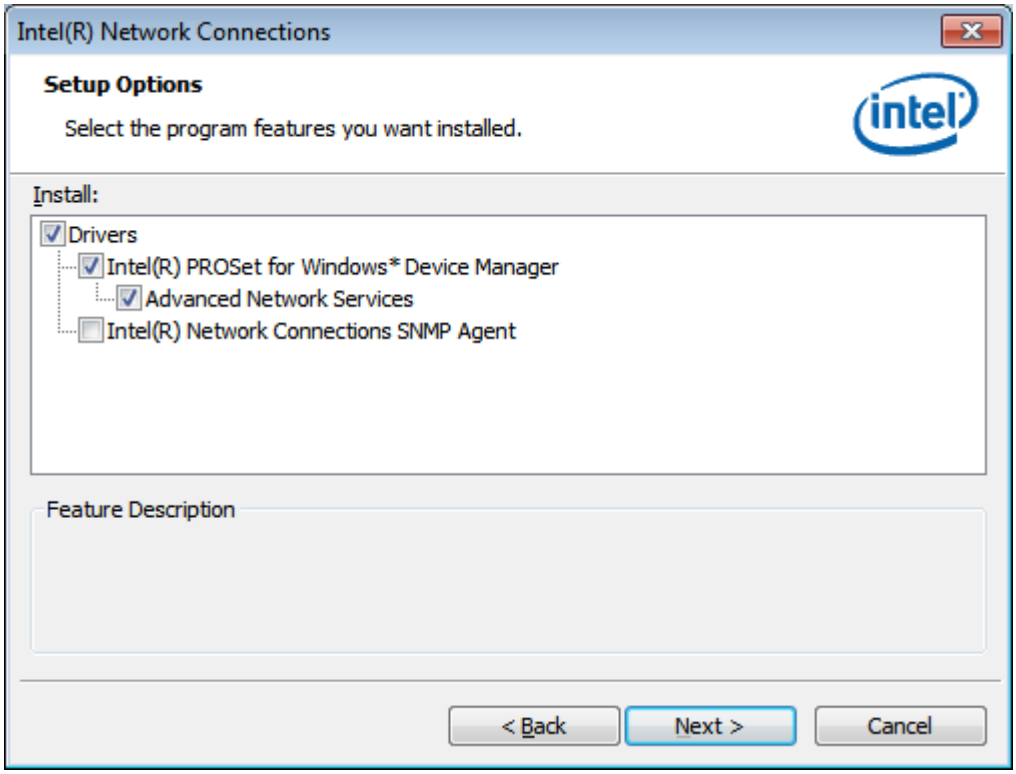
Step 2. Click **Next** to continue.


Intel(R) Network Connections Install Wizard
Welcome to the install wizard for Intel(R) Network Connections
intel
Installs drivers, Intel(R) Network Connections, and Advanced Networking Services.
WARNING: This program is protected by copyright law and international treaties.
< Back
Next >
Cancel

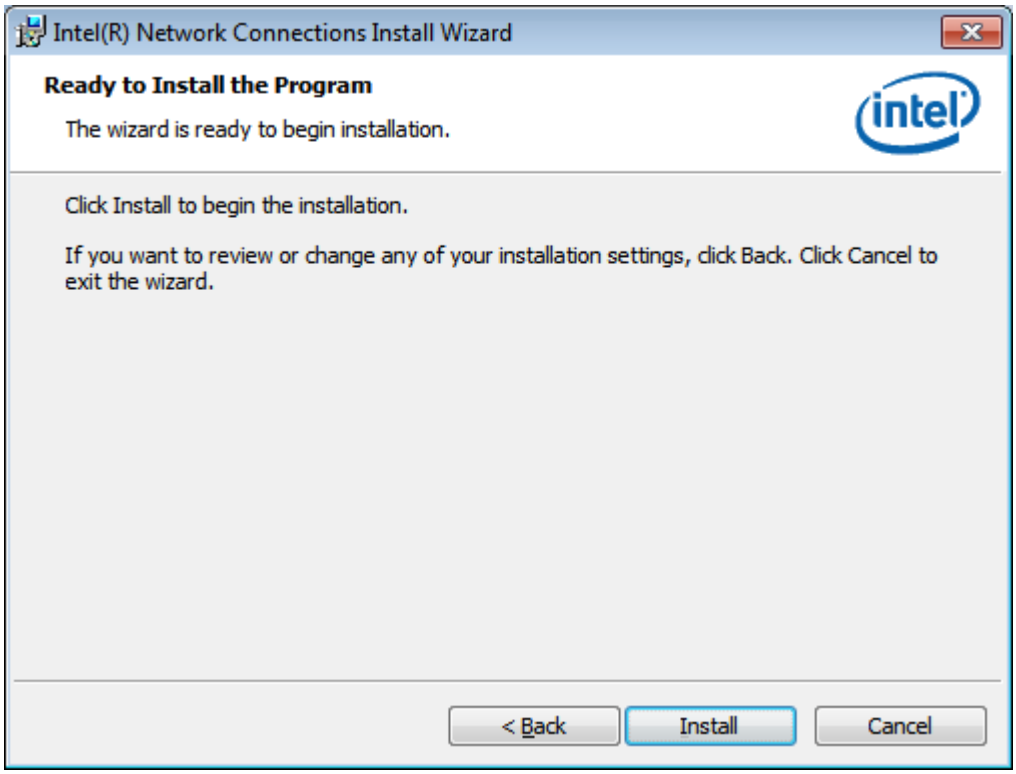
Step 3. Read license agreement. Click **I accept the terms in the license agreement.**
Click **Next**


Intel(R) Network Connections Install Wizard
License Agreement
Please read the following license agreement carefully.
INTEL SOFTWARE LICENSE AGREEMENT
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not copy, install, or use this software and any associated materials (collectively, the "Software") provided under this license agreement ("Agreement") until you have carefully read the following terms and conditions.
By copying, installing, or otherwise using the Software, you agree to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement, do not copy, install, or use the Software.
I accept the terms in the license agreement
I do not accept the terms in the license agreement
Print
< Back
Next >
Cancel

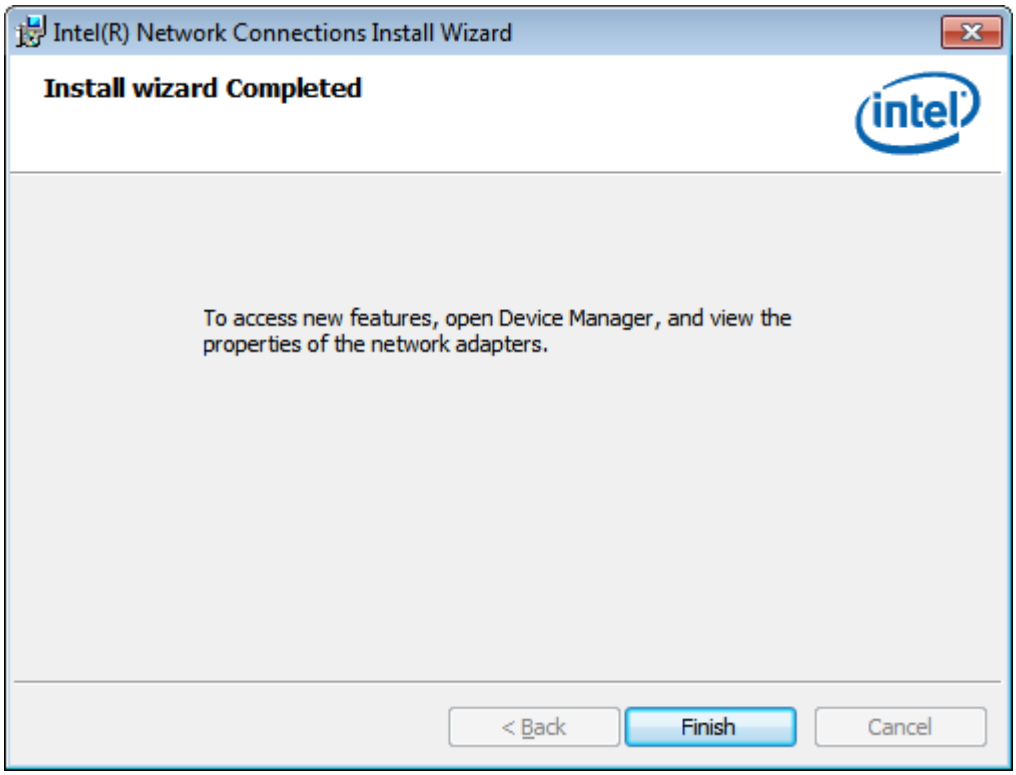
Step 4. Click **Advanced Network Services**. Click **Next**



Step 5. Click **Install** to begin the installation.


Intel(R) Network Connections Install Wizard
Ready to Install the Program
The wizard is ready to begin installation.
Click Install to begin the installation.
If you want to review or change any of your installation settings, click Back. Click Cancel to exit the wizard.
< Back
Install
Cancel

Step 6. Click **Finish** to exist the wizard.

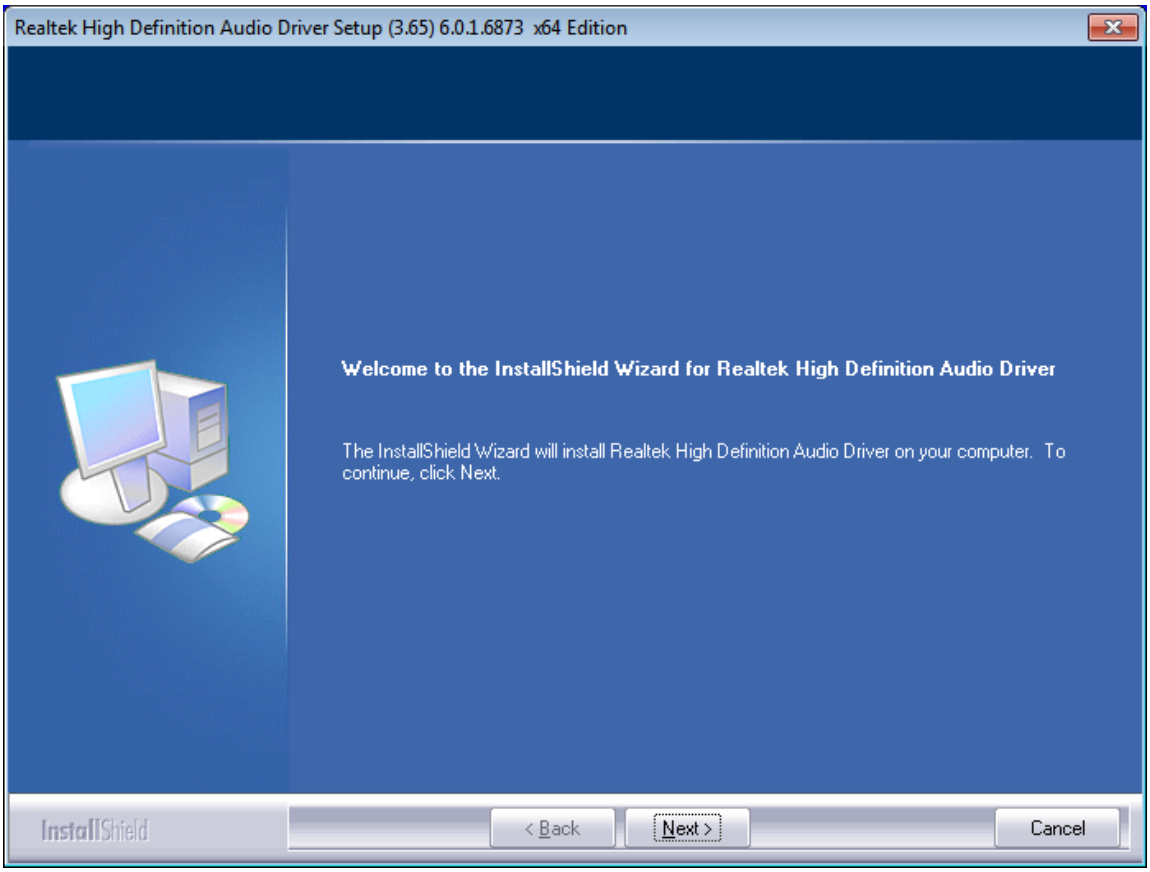

Intel(R) Network Connections Install Wizard
Install wizard Completed
To access new features, open Device Manager, and view the properties of the network adapters.
< Back
Finish
Cancel

5.4 Realtek ALC662 Audio Codec Driver Installation

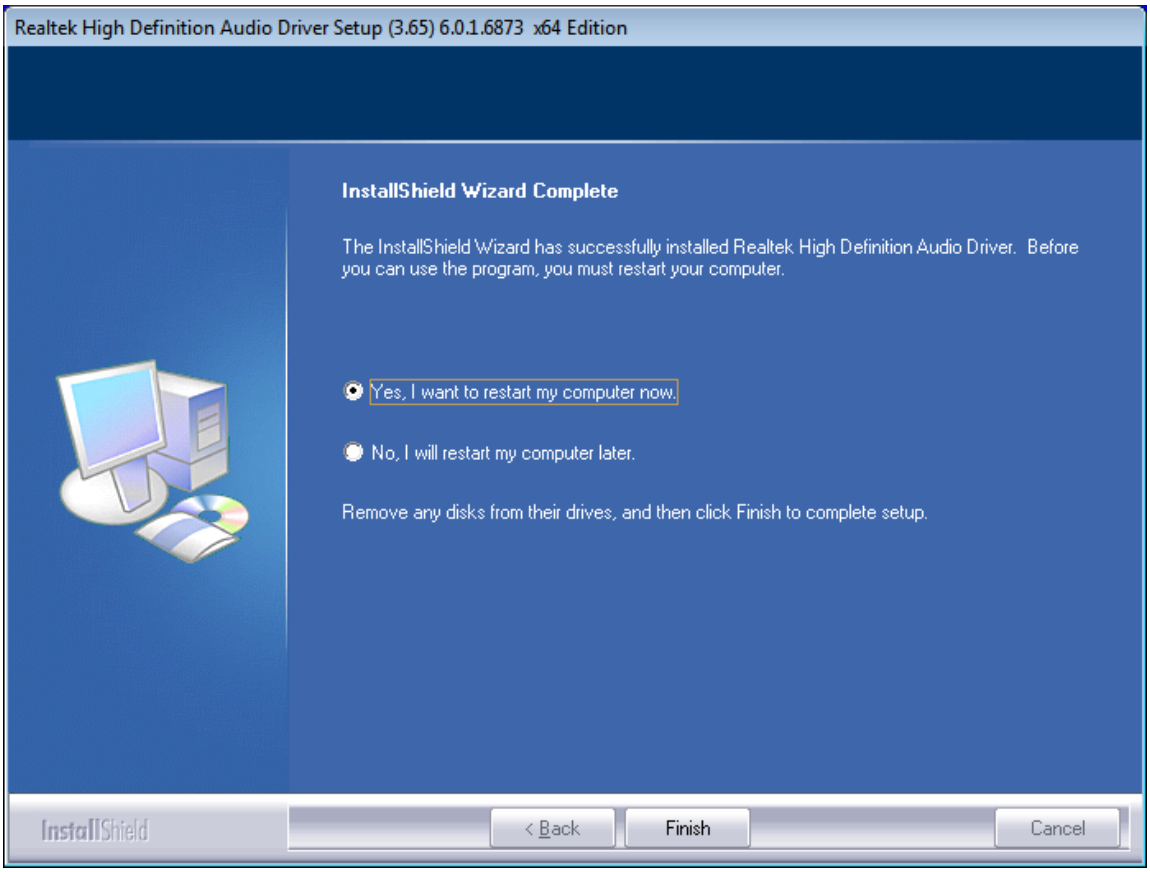
To install the Realtek ALC662 HD Audio Codec Driver, please follow the steps below.

Step 1. Select **Realtek ALC662 Audio Codec Driver** from the list

Step 2. Click **Next** to continue.


Realtek High Definition Audio Driver Setup (3.65) 6.0.1.6873 x64 Edition
Welcome to the InstallShield Wizard for Realtek High Definition Audio Driver
The InstallShield Wizard will install Realtek High Definition Audio Driver on your computer. To continue, click Next.
InstallShield
< Back
Next >
Cancel

Step 3. Click **Yes, I want to restart my computer now**. Click **Finish** to complete the installation.

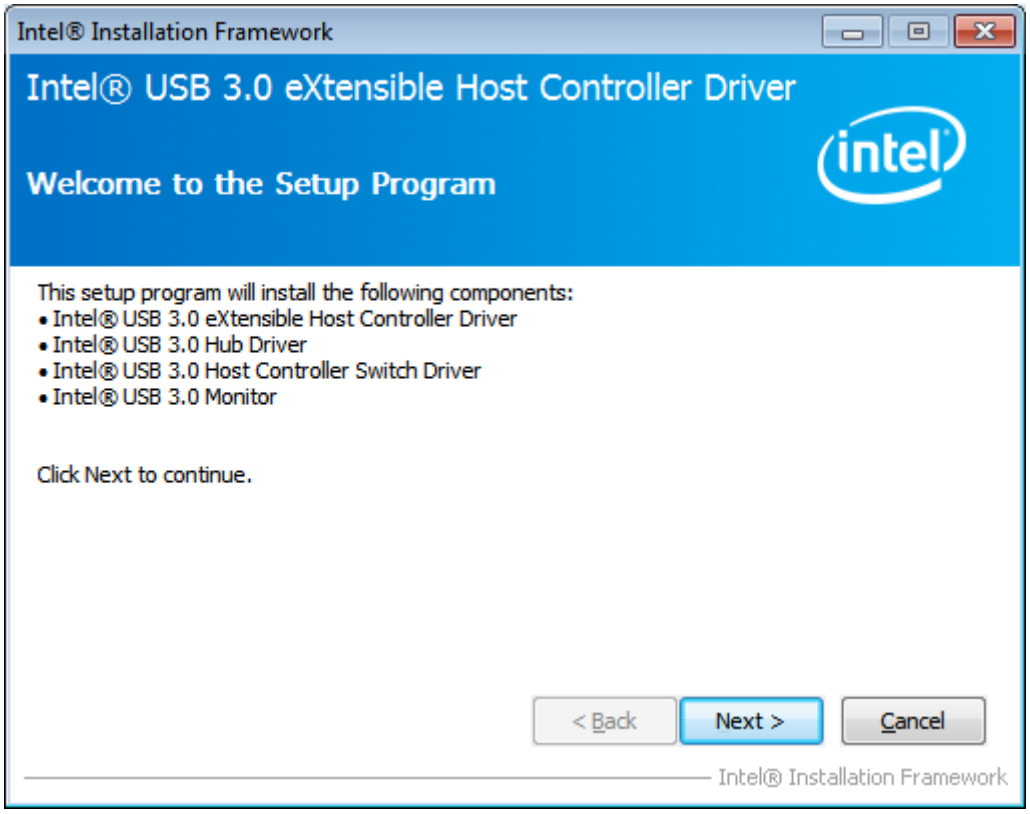

Realtek High Definition Audio Driver Setup (3.65) 6.0.1.6873 x64 Edition
InstallShield Wizard Complete
The InstallShield Wizard has successfully installed Realtek High Definition Audio Driver. Before you can use the program, you must restart your computer.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Remove any disks from their drives, and then click Finish to complete setup.
InstallShield
< Back
Finish
Cancel

5.5 Intel (R) USB 3.0 Driver

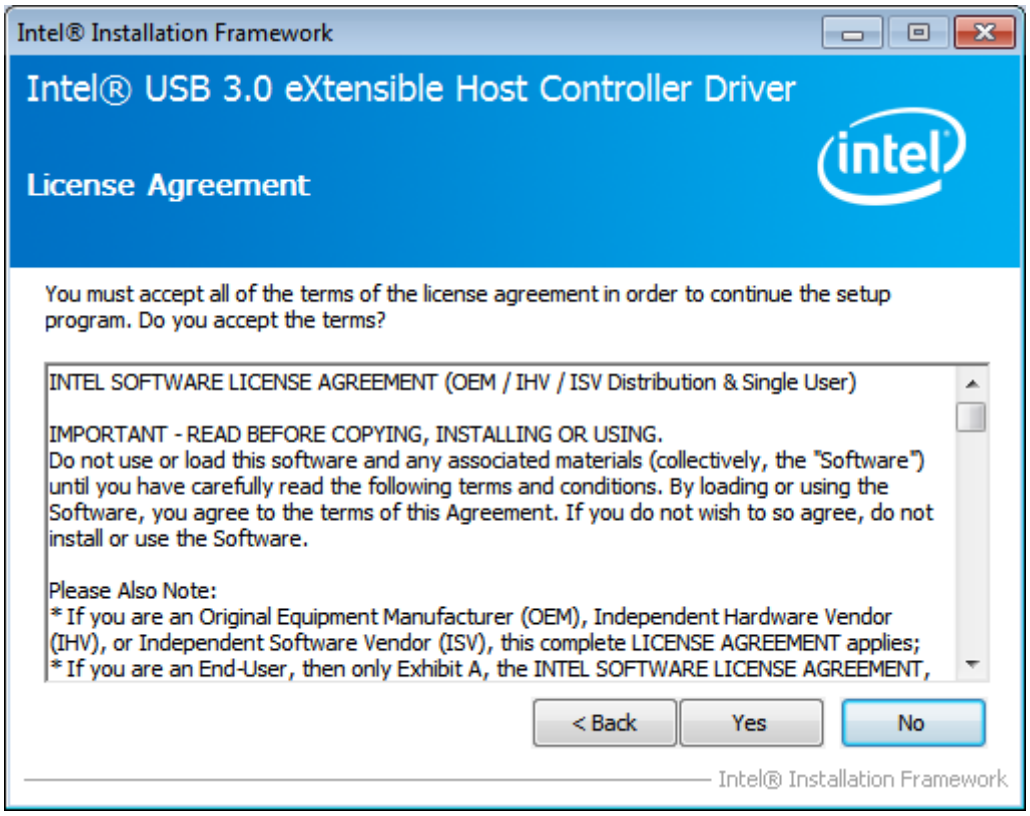
To install the Intel (R) USB 3.0 Driver, please follow the steps below.

Step 1. Select **Intel (R) USB 3.0 Driver.**

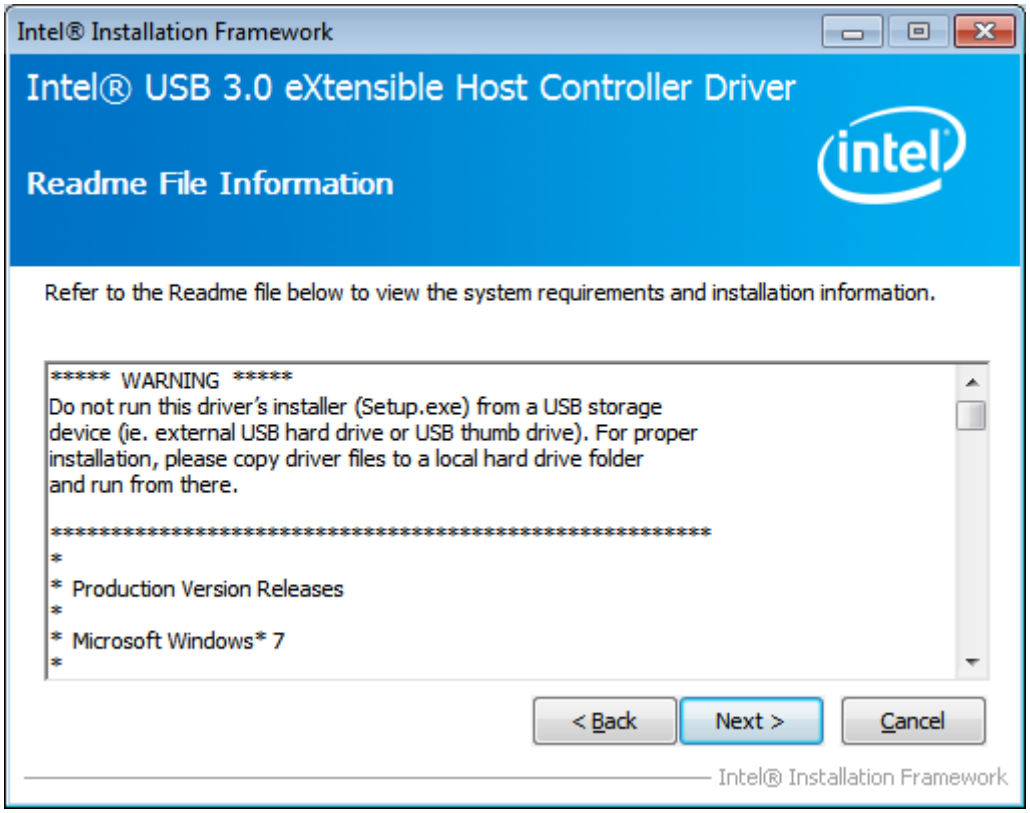
Step 2. Click **Next.**


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Welcome to the Setup Program
intel
This setup program will install the following components:
• Intel® USB 3.0 eXtensible Host Controller Driver
• Intel® USB 3.0 Hub Driver
• Intel® USB 3.0 Host Controller Switch Driver
• Intel® USB 3.0 Monitor
Click Next to continue.
< Back
Next >
Cancel
Intel® Installation Framework

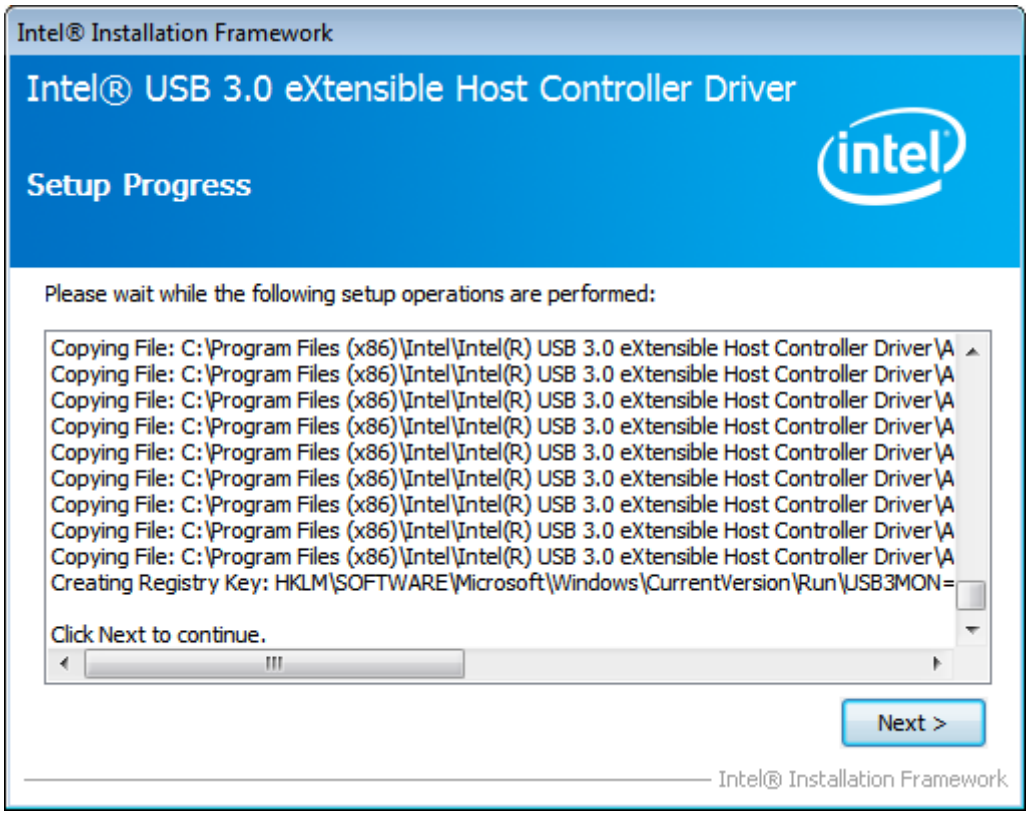
Step 3. Read license agreement**.** Click **Yes**


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
License Agreement
intel
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

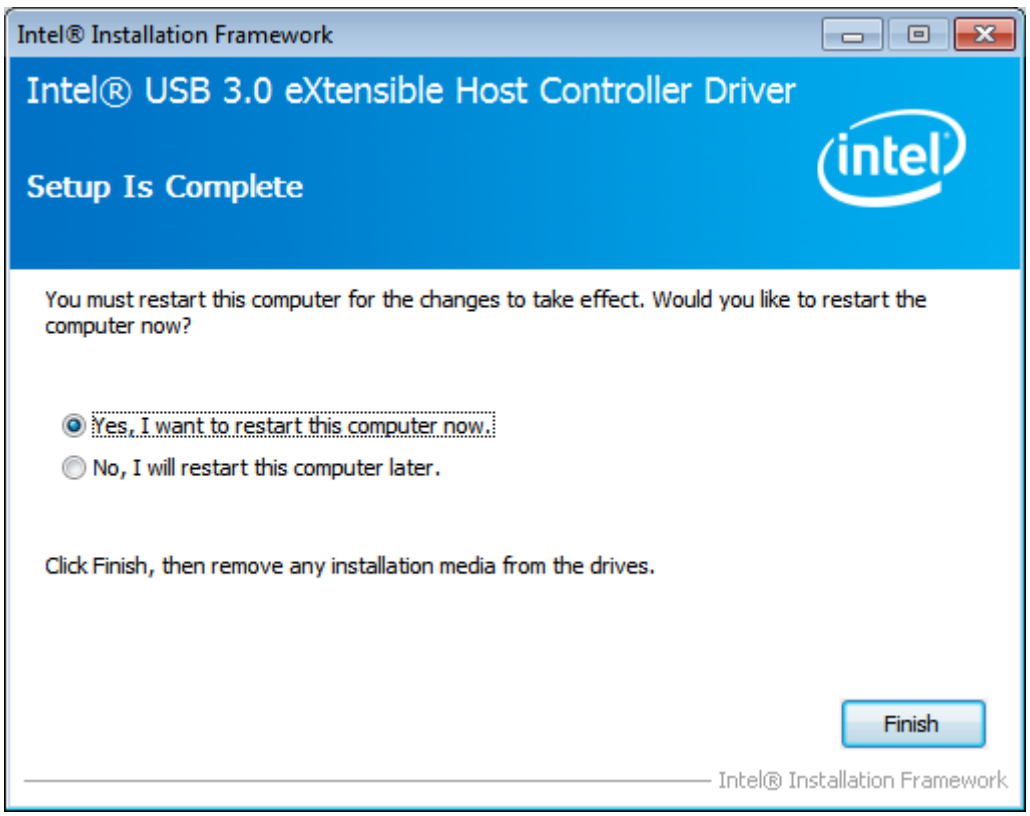
Step 4. Click **Next**


Intel® Installation Framework
Intel® USB 3.0 eXtensible Host Controller Driver
Readme File Information
intel
Refer to the Readme file below to view the system requirements and installation information.
***** WARNING *****
Do not run this driver's installer (Setup.exe) from a USB storage device (ie. external USB hard drive or USB thumb drive). For proper installation, please copy driver files to a local hard drive folder and run from there.
****
*
* Production Version Releases
*
* Microsoft Windows* 7
*
< Back
Next >
Cancel
Intel® Installation Framework

Step 5. Click **Next**



Step 6. Click **Yes, I want to restart this computer now**. Click **Finish** to complete the installation.

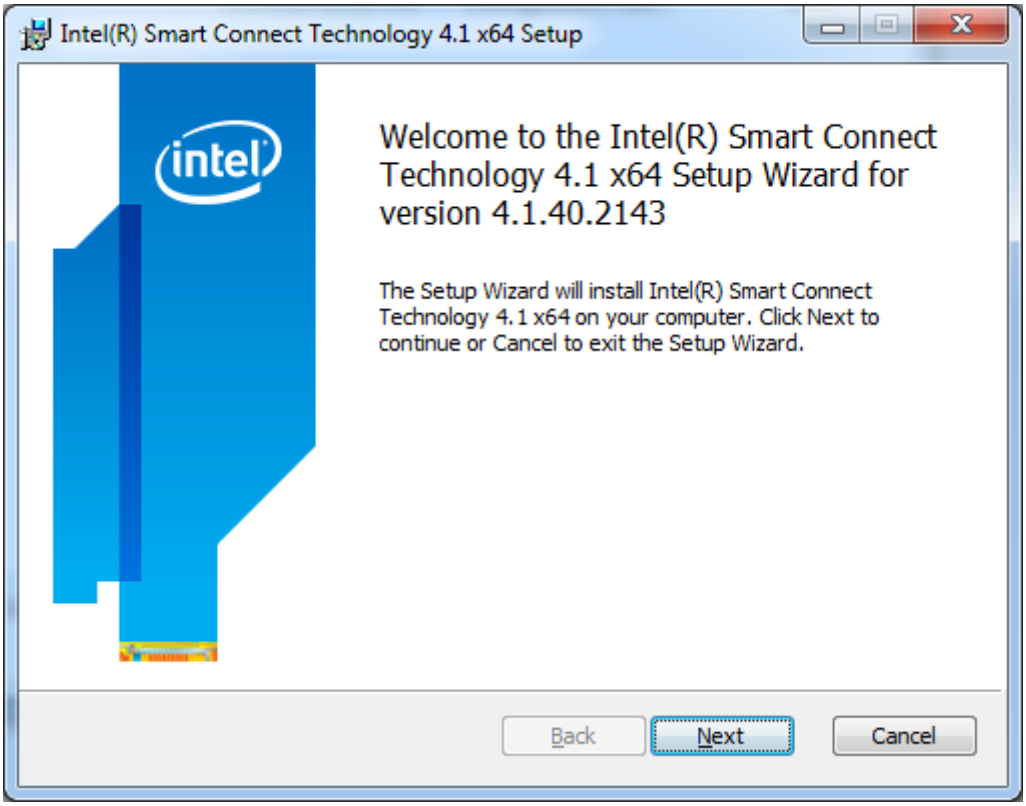


5.6 Intel (R) Smart Connect Technology Driver

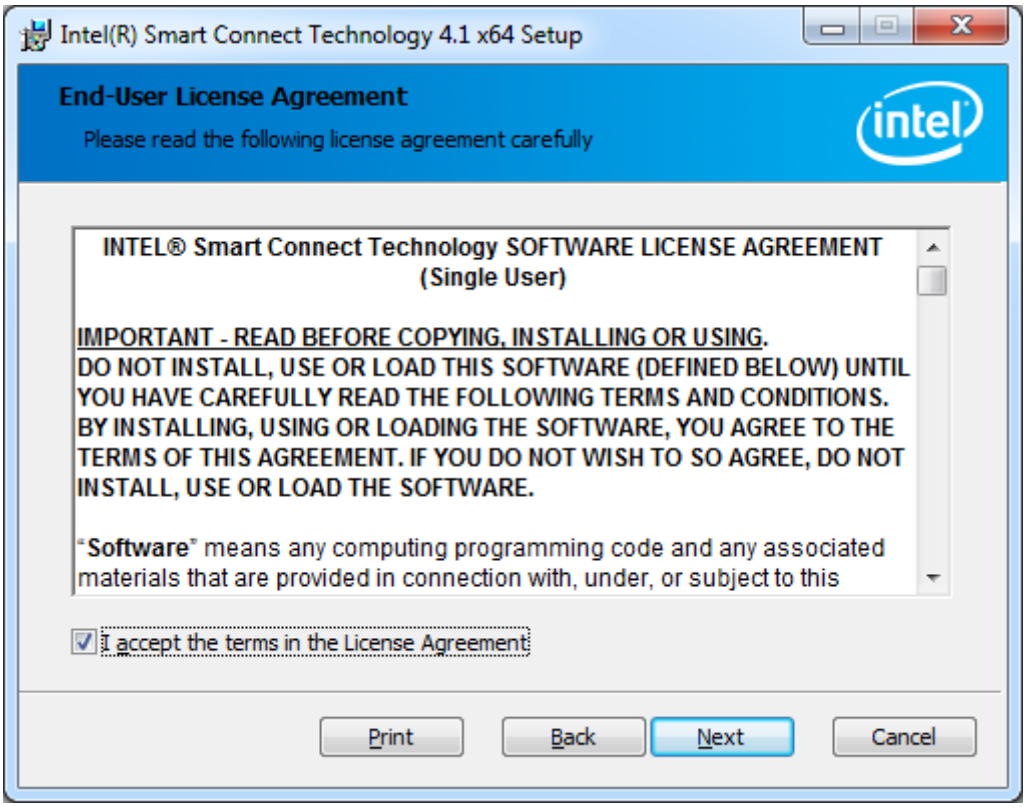
To install the Intel (R) Smart Connect Technology Driver, please follow the steps below.

Step 1. Select **Intel (R) Smart Connect Technology Driver.**

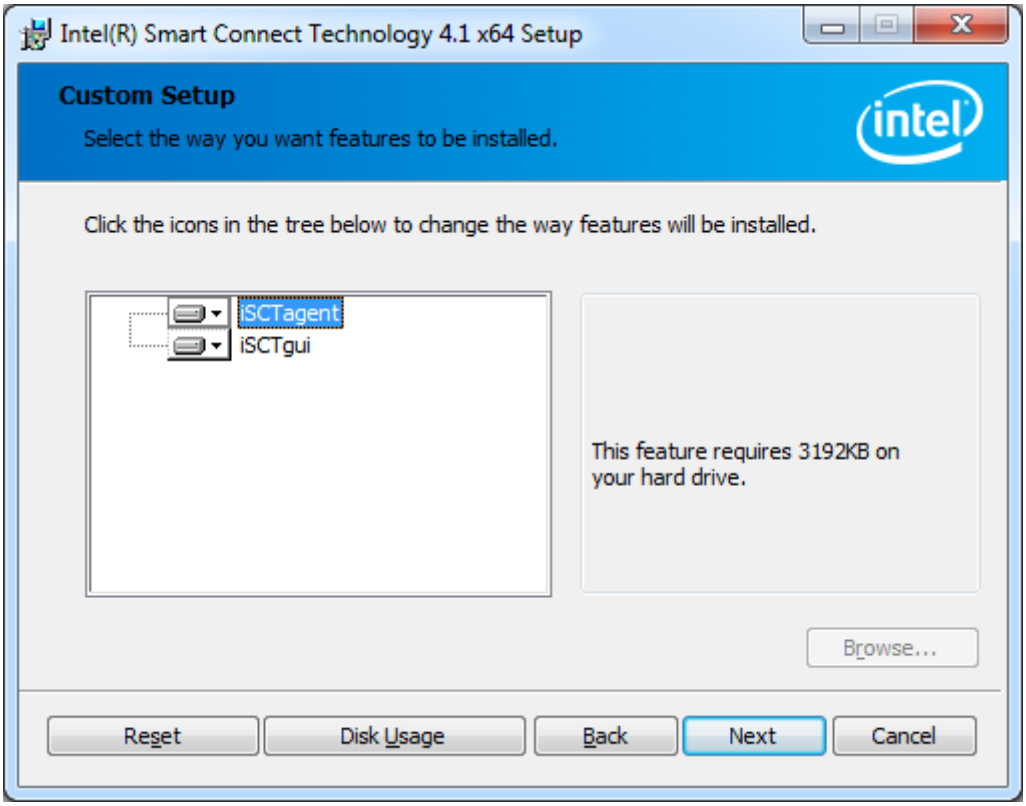
Step 2. Click **Next**


Intel(R) Smart Connect Technology 4.1 x64 Setup
intel
Welcome to the Intel(R) Smart Connect Technology 4.1 x64 Setup Wizard for version 4.1.40.2143
The Setup Wizard will install Intel(R) Smart Connect Technology 4.1 x64 on your computer. Click Next to continue or Cancel to exit the Setup Wizard.
Back
Next
Cancel

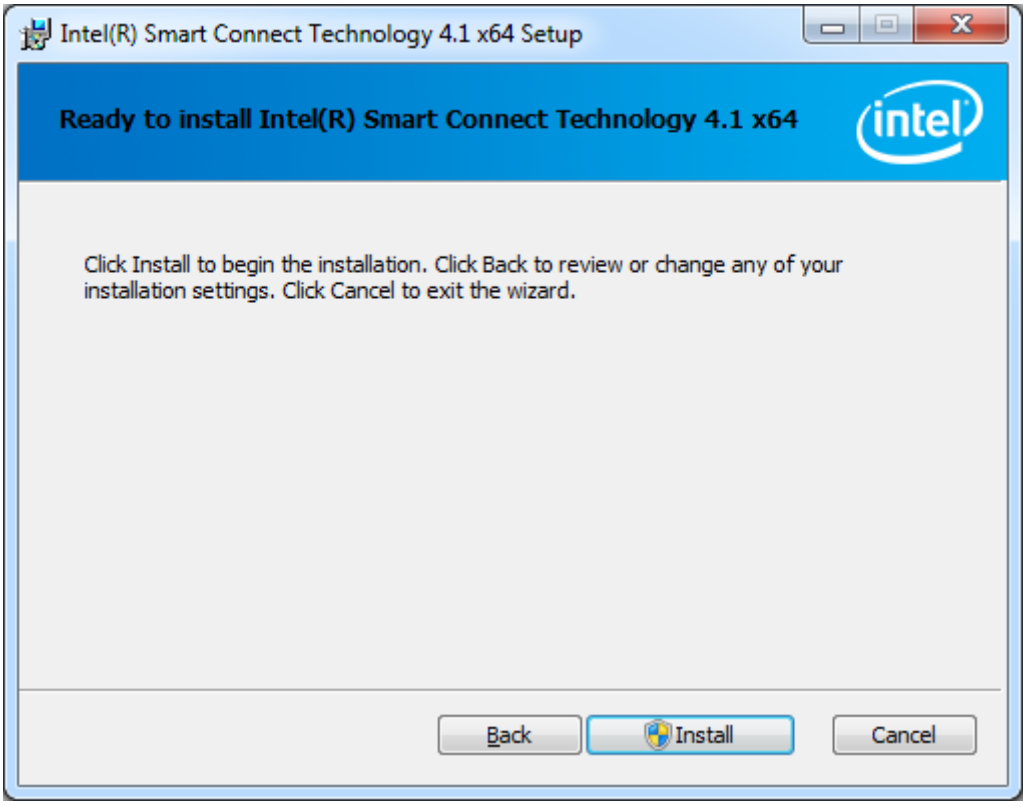
Step 3. Read license agreement. Click **I accept the terms in the License Agreement.**
Click **Next.**


Intel(R) Smart Connect Technology 4.1 x64 Setup
End-User License Agreement
Please read the following license agreement carefully
INTEL® Smart Connect Technology SOFTWARE LICENSE AGREEMENT
(Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
DO NOT INSTALL, USE OR LOAD THIS SOFTWARE (DEFINED BELOW) UNTIL YOU HAVE CAREFULLY READ THE FOLLOWING TERMS AND CONDITIONS. BY INSTALLING, USING OR LOADING THE SOFTWARE, YOU AGREE TO THE TERMS OF THIS AGREEMENT. IF YOU DO NOT WISH TO SO AGREE, DO NOT INSTALL, USE OR LOAD THE SOFTWARE.
"Software" means any computing programming code and any associated materials that are provided in connection with, under, or subject to this
I accept the terms in the License Agreement
Print
Back
Next
Cancel

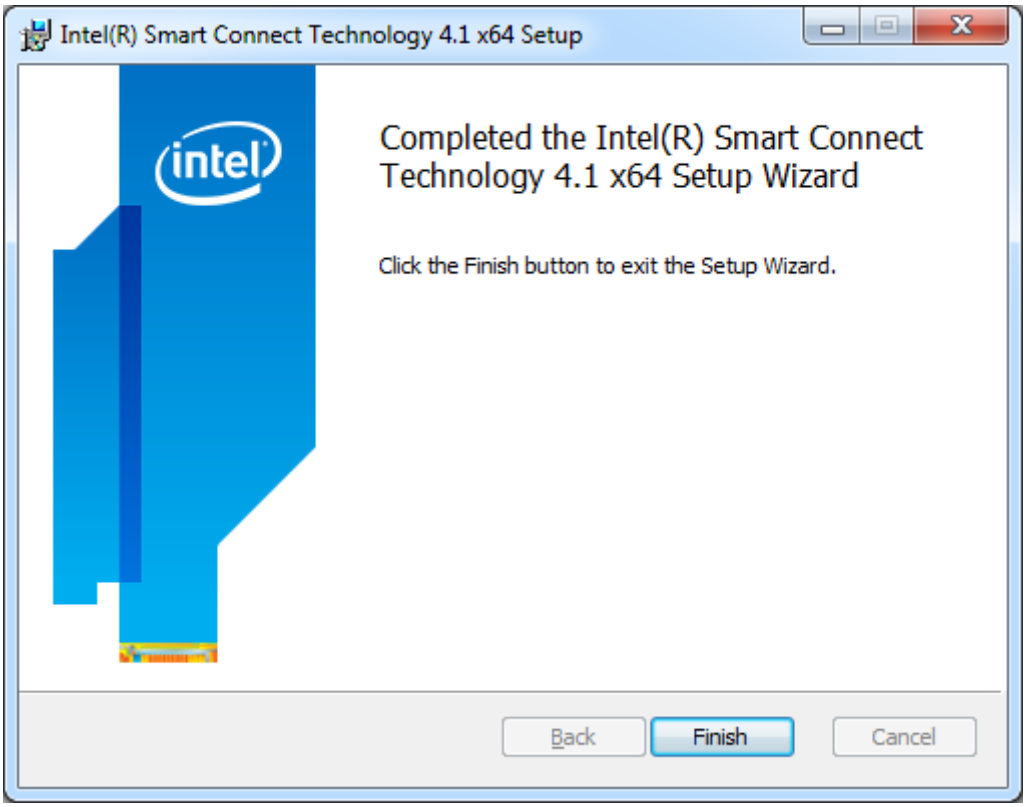
Step 4. Select the icons in the tree below to change the way features will be installed.
Click **Next.**



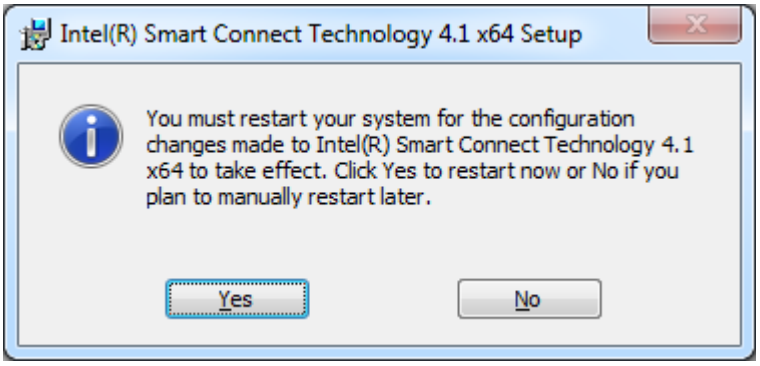
Step 5. Click **Install** to begin the installation.


Intel(R) Smart Connect Technology 4.1 x64 Setup
Ready to install Intel(R) Smart Connect Technology 4.1 x64
intel
Click Install to begin the installation. Click Back to review or change any of your installation settings. Click Cancel to exit the wizard.
Back
Install
Cancel

Step 6. Click **Finish** to exist the wizard.


Intel(R) Smart Connect Technology 4.1 x64 Setup
intel
Completed the Intel(R) Smart Connect Technology 4.1 x64 Setup Wizard
Click the Finish button to exit the Setup Wizard.
Back
Finish
Cancel

Step 6. Click **Yes** to restart your system for the configuration changes made to Intel(R) Smart Connect Technology Driver.

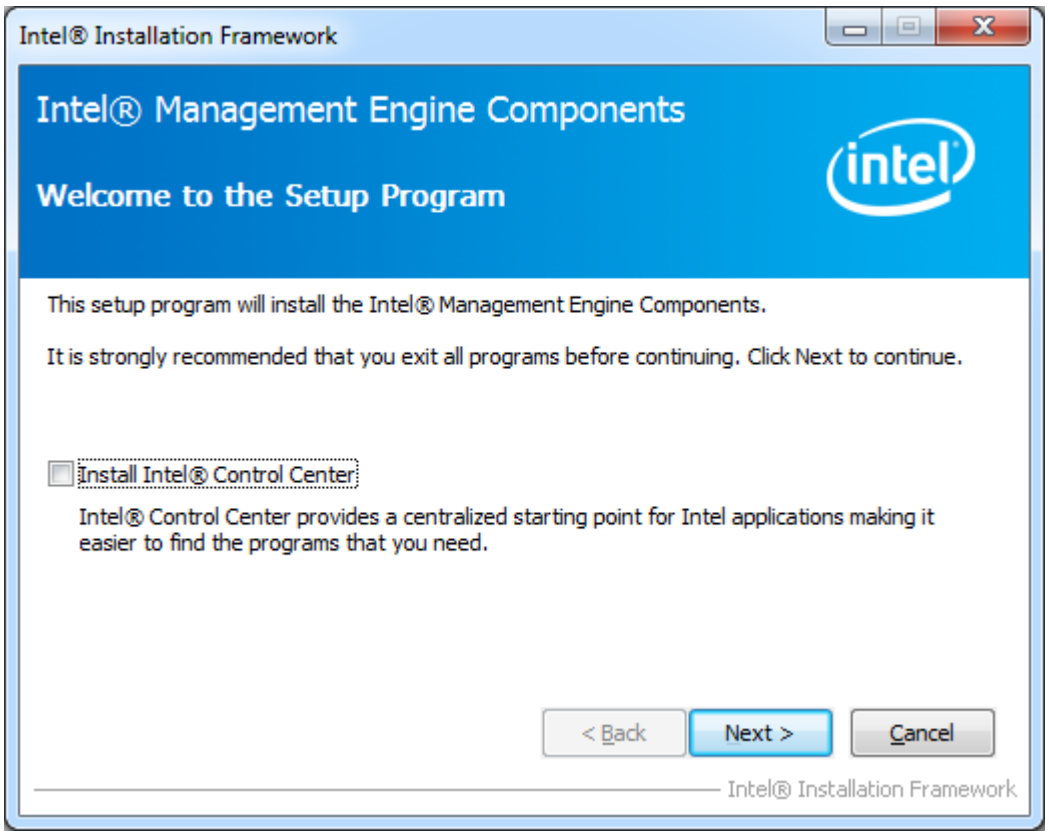

Intel(R) Smart Connect Technology 4.1 x64 Setup
You must restart your system for the configuration changes made to Intel(R) Smart Connect Technology 4.1 x64 to take effect. Click Yes to restart now or No if you plan to manually restart later.
Yes
No

5.7 Intel (R) iAMT Driver

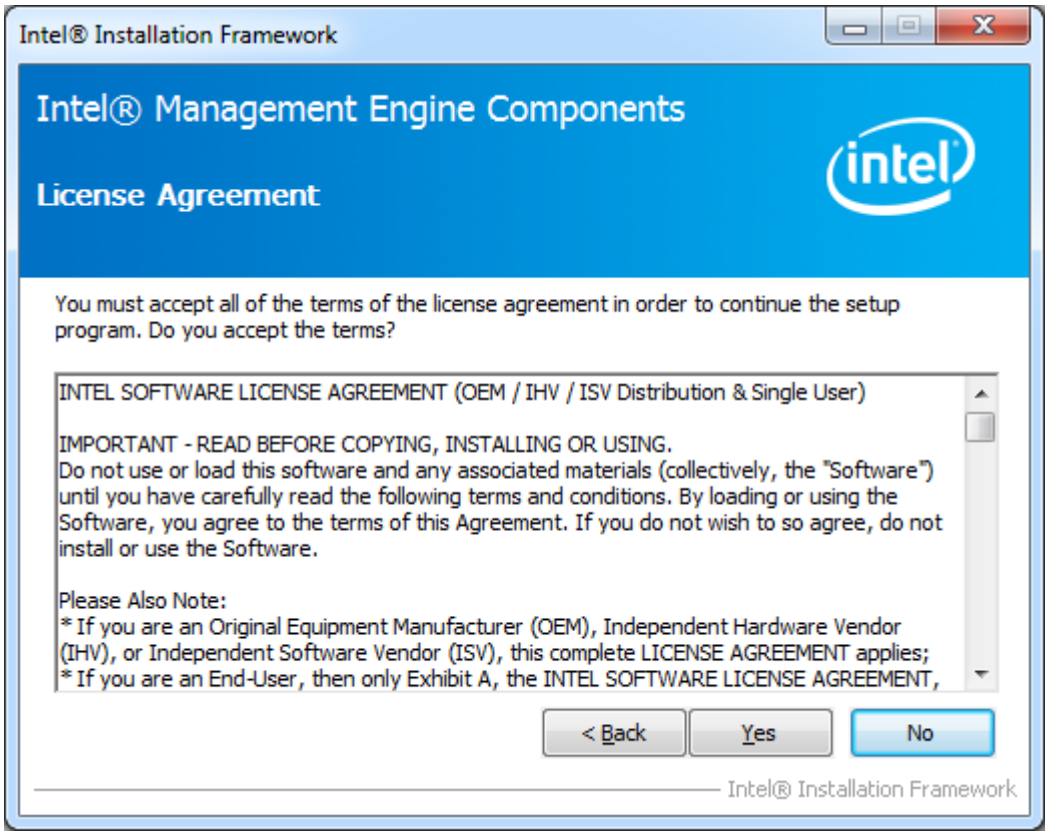
To install the Intel (R) iAMT Driver, please follow the steps below.

Step 1. Select **Intel (R) iAMT Driver.**

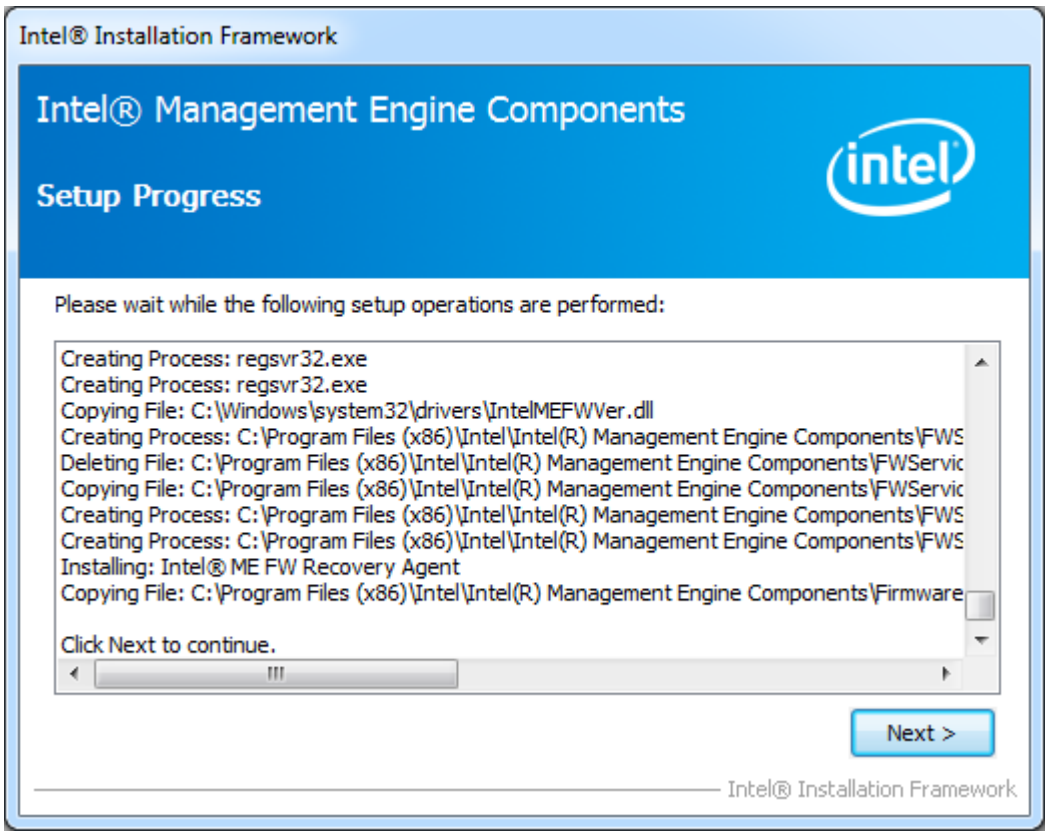
Step 2. Click **Next.**


Intel® Installation Framework
Intel® Management Engine Components
Welcome to the Setup Program
intel
This setup program will install the Intel® Management Engine Components.
It is strongly recommended that you exit all programs before continuing. Click Next to continue.
Install Intel® Control Center
Intel® Control Center provides a centralized starting point for Intel applications making it easier to find the programs that you need.
< Back
Next >
Cancel
Intel® Installation Framework

Step 3. Read license agreement**.** Click **Yes**


Intel® Installation Framework
Intel® Management Engine Components
License Agreement
You must accept all of the terms of the license agreement in order to continue the setup program. Do you accept the terms?
INTEL SOFTWARE LICENSE AGREEMENT (OEM / IHV / ISV Distribution & Single User)
IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING.
Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this Agreement. If you do not wish to so agree, do not install or use the Software.
Please Also Note:
* If you are an Original Equipment Manufacturer (OEM), Independent Hardware Vendor (IHV), or Independent Software Vendor (ISV), this complete LICENSE AGREEMENT applies;
* If you are an End-User, then only Exhibit A, the INTEL SOFTWARE LICENSE AGREEMENT,
< Back
Yes
No
Intel® Installation Framework

Step 4. Click **Yes**


Intel® Installation Framework
Intel® Management Engine Components
Setup Progress
Please wait while the following setup operations are performed:
Creating Process: regsvr32.exe
Creating Process: regsvr32.exe
Copying File: C:\Windows\system32\drivers\IntelMEFWVer.dll
Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWS
Deleting File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWServic
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWServic
Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWS
Creating Process: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\FWS
Installing: Intel® ME FW Recovery Agent
Copying File: C:\Program Files (x86)\Intel\Intel(R) Management Engine Components\Firmware
Click Next to continue.
Next >
Intel® Installation Framework

Step 5. Click **Yes, I want to restart this computer now**. Click **Finish** to complete the installation.

Intel® Installation Framework
Intel® Management Engine Components
Setup Is Complete
intel
The setup program successfully installed the following components:
- Intel® Management Engine Interface
- Intel® Dynamic Application Loader
- Intel® Identity Protection Technology (Intel® IPT)
- Serial Over LAN
- Intel® Management and Security Status
- Local Management Service
You must restart this computer for the changes to take effect. Would you like to restart the computer now?
Yes, I want to restart this computer now.
No, I will restart this computer later.
Click Finish, then remove any installation media from the drives.
Finish
Intel® Installation Framework

Chapter 6 Touch Screen Installation

This chapter describes how to install drivers and other software that will allow your touch screen work with different operating systems.

6.1 Windows 2000/XP/2003/Vista/WIN7/WIN8 Universal Driver

Installation for PenMount 6000 Series

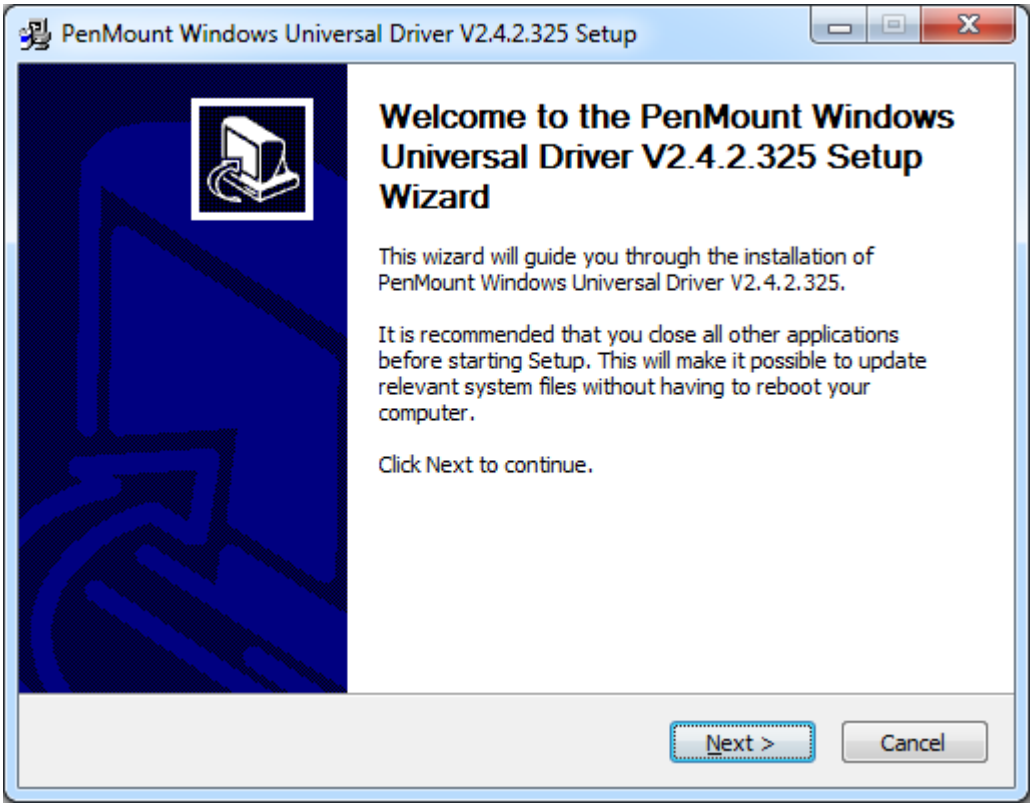
Before installing the Windows 2000/XP driver software, you must have the Windows 2000/XP system installed and running on your computer. You must also have one of the following PenMount 6000 series controller or control boards installed: PM6500, PM6300.

6.2 Installing Software

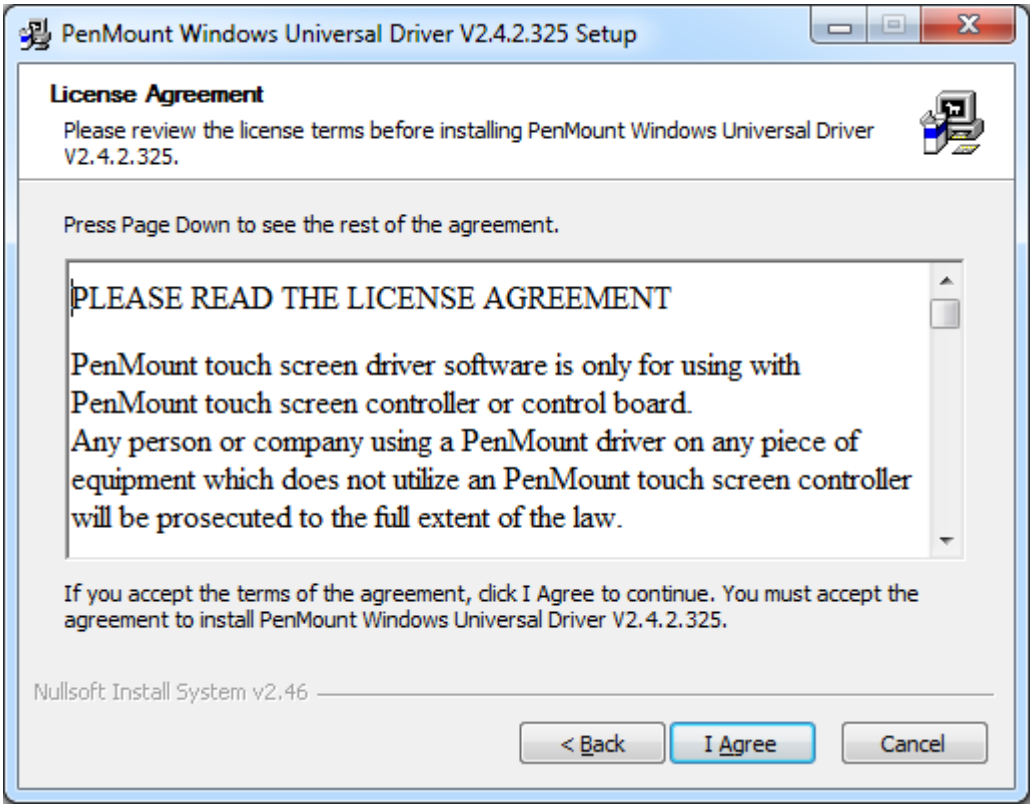
If you have an older version of the PenMount Windows 2000/XP driver installed in your system, please remove it first. Follow the steps below to install the PenMount DMC6000 Windows 2000/XP driver.

Step 1. Insert the product CD, the screen below would appear. Click touch panel driver.

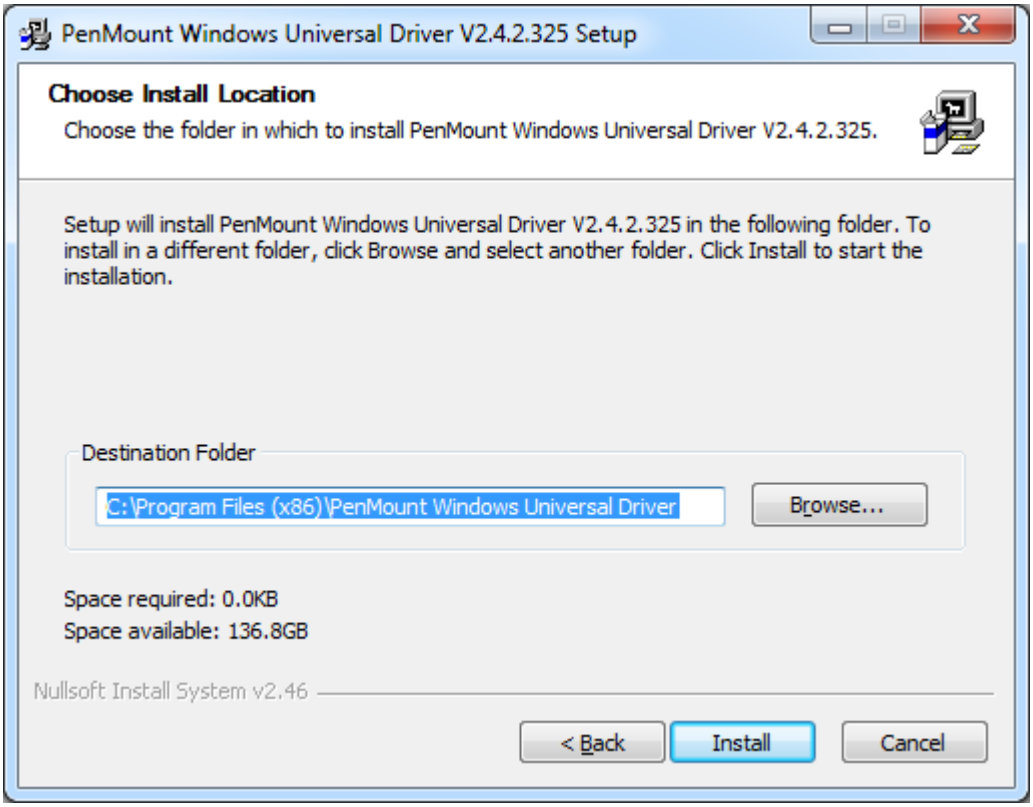
Step 2. Click **Next** to continue.


PenMount Windows Universal Driver V2.4.2.325 Setup
Welcome to the PenMount Windows Universal Driver V2.4.2.325 Setup Wizard
This wizard will guide you through the installation of PenMount Windows Universal Driver V2.4.2.325.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel

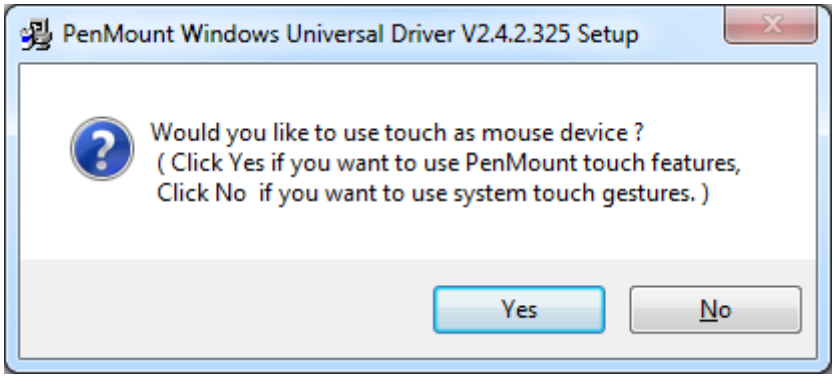
Step 3. Read the license agreement. Click **I Agree** to agree the license agreement.


PenMount Windows Universal Driver V2.4.2.325 Setup
License Agreement
Please review the license terms before installing PenMount Windows Universal Driver V2.4.2.325.
Press Page Down to see the rest of the agreement.
PLEASE READ THE LICENSE AGREEMENT
PenMount touch screen driver software is only for using with PenMount touch screen controller or control board.
Any person or company using a PenMount driver on any piece of equipment which does not utilize an PenMount touch screen controller will be prosecuted to the full extent of the law.
If you accept the terms of the agreement, click I Agree to continue. You must accept the agreement to install PenMount Windows Universal Driver V2.4.2.325.
Nullsoft Install System v2.46
< Back
I Agree
Cancel

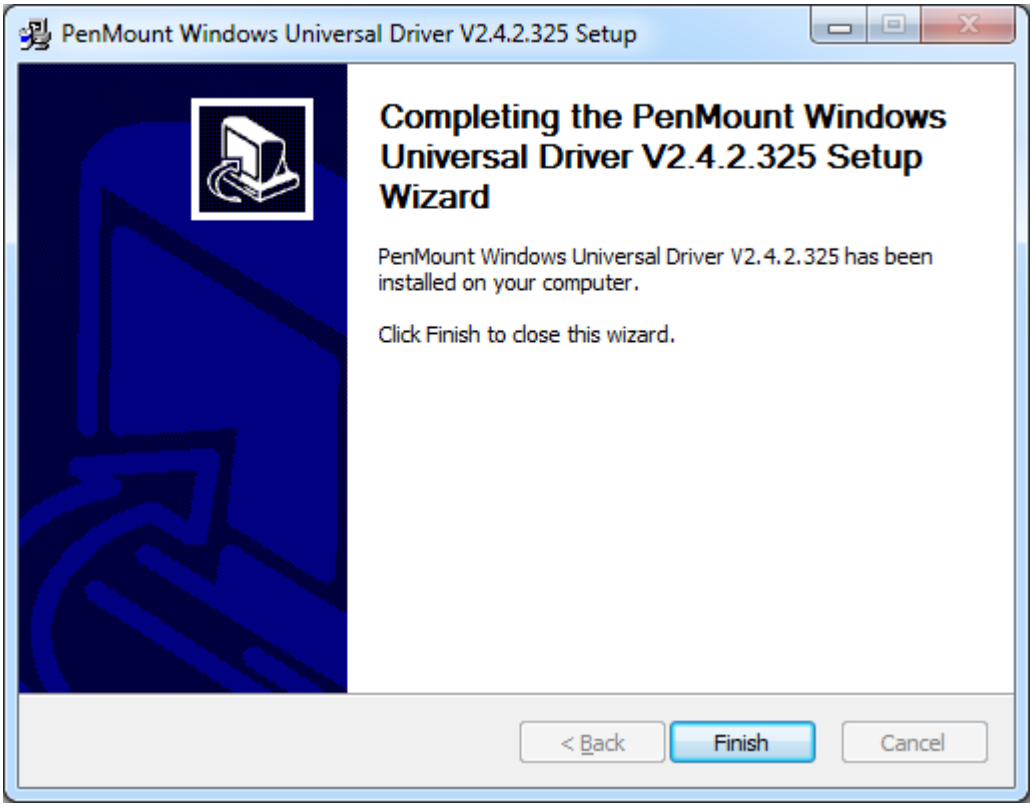
Step 4. Choose the folder in which to install PenMount Windows Universal Driver. Click **Install** to start the installation.


PenMount Windows Universal Driver V2.4.2.325 Setup
Choose Install Location
Choose the folder in which to install PenMount Windows Universal Driver V2.4.2.325.
Setup will install PenMount Windows Universal Driver V2.4.2.325 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\Program Files (x86)\PenMount Windows Universal Driver
Browse...
Space required: 0.0KB
Space available: 136.8GB
Nullsoft Install System v2.46
< Back
Install
Cancel

Step 5. Click **Yes**


PenMount Windows Universal Driver V2.4.2.325 Setup
Would you like to use touch as mouse device ?
(Click Yes if you want to use PenMount touch features,
Click No if you want to use system touch gestures.)
Yes
No

Step 6. Click **Finish** to complete installation


PenMount Windows Universal Driver V2.4.2.325 Setup
Completing the PenMount Windows Universal Driver V2.4.2.325 Setup Wizard
PenMount Windows Universal Driver V2.4.2.325 has been installed on your computer.
Click Finish to close this wizard.
< Back
Finish
Cancel

6.3 Software Functions

Upon rebooting, the computer automatically finds the new 6000 controller board. The touch screen is connected but not calibrated. Follow the procedures below to carry out calibration.

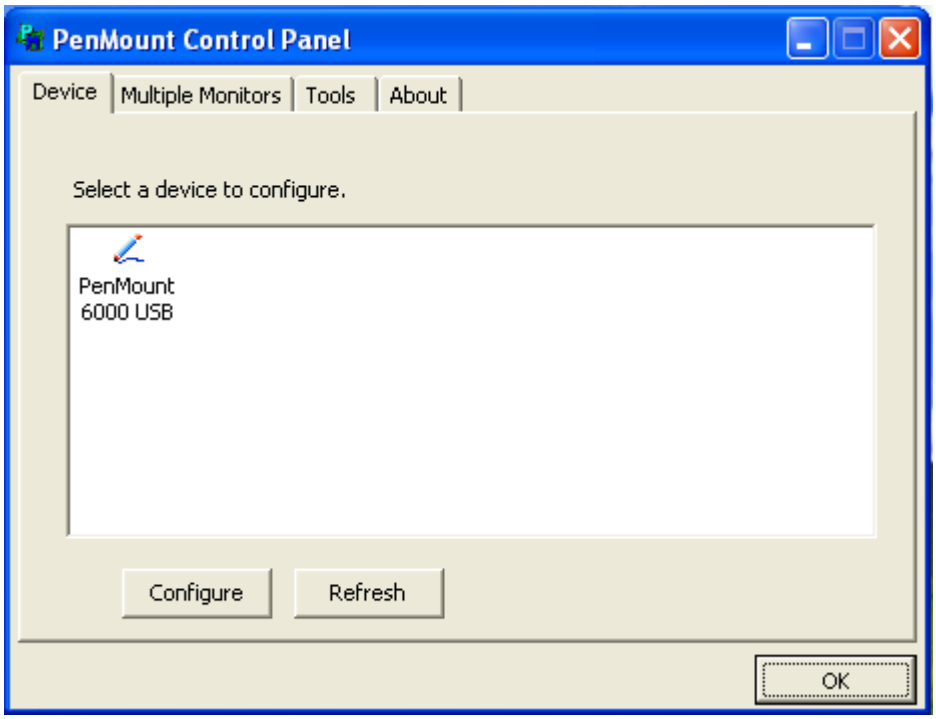
1. After installation, click the PenMount Monitor icon “PM” in the menu bar.
2. When the PenMount Control Panel appears, select a device to “Calibrate.”

PenMount Control Panel

The functions of the PenMount Control Panel are **Device, Multiple Monitors**,**Tools** and **About**, which are explained in the following sections.

Device

In this window, you can find out that how many devices be detected on your system.

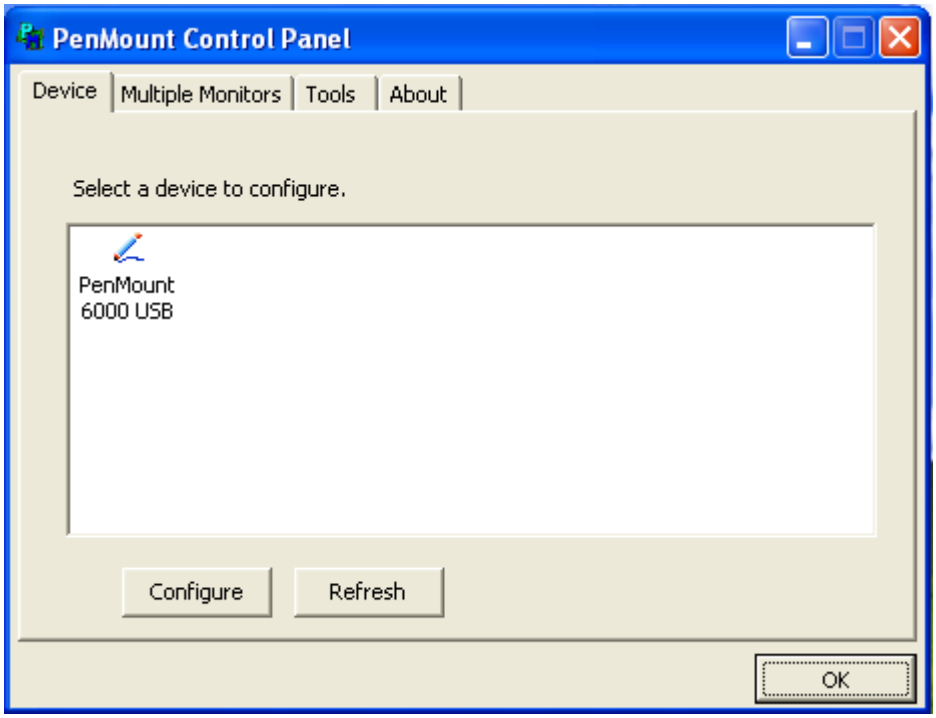


Calibrate

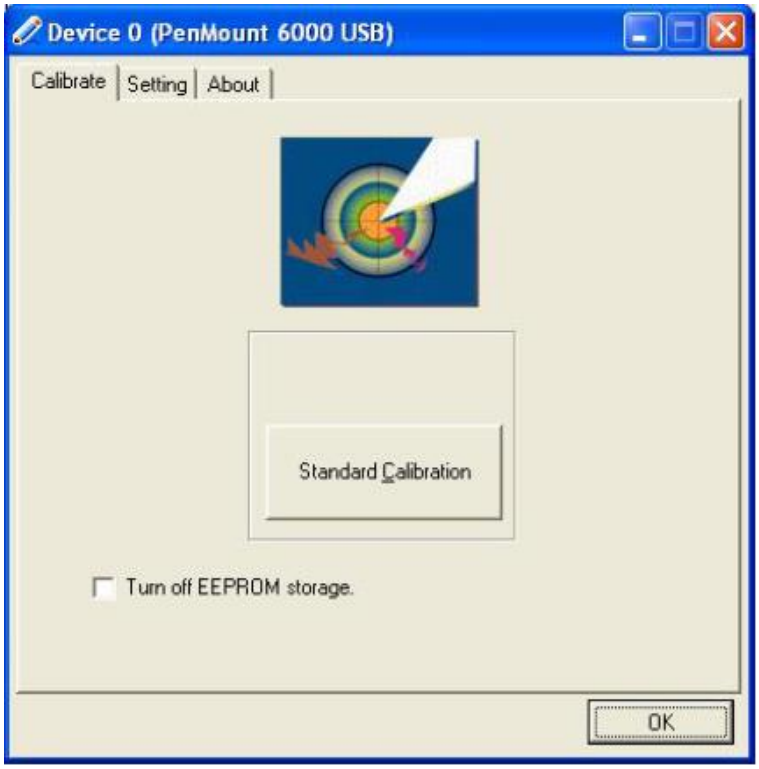
This function offers two ways to calibrate your touch screen. ‘Standard Calibration’ adjusts most touch screens. ‘Advanced Calibration’ adjusts aging touch screens.

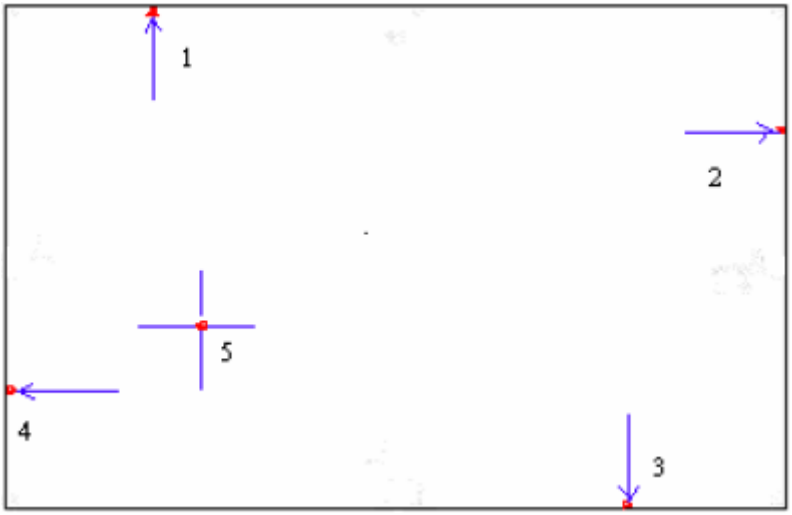
Standard Calibration	**Click this button and arrows appear pointing to red squares. Use your finger or stylus to touch the red squares in sequence. After the fifth red point calibration is complete. To skip, press ‘ESC’.**
Advanced Calibration	**Advanced Calibration uses 4, 9, 16 or 25 points to effectively calibrate touch panel linearity of aged touch screens. Click this button and touch the red squares in sequence with a stylus. To skip, press ESC’.**
Command Calibration	**Command call calibration function. Use command mode call calibration function, this can uses Standard, 4, 9, 16 or 25 points to calibrate** E.g. Please run ms-dos prompt or command prompt c:\Program Files\PenMount Universa Driver\Dmcctrl.exe -calibration 0 (Standard Calibration) Dmcctrl.exe - calibration ($) 0= Standard Calibration 4=Advanced Calibration 4 9=Advanced Calibration 9 16=Advanced Calibration 16 25=Advanced Calibration 25

Step 1. Please select a device then click “Configure”. You can also double click the device too.



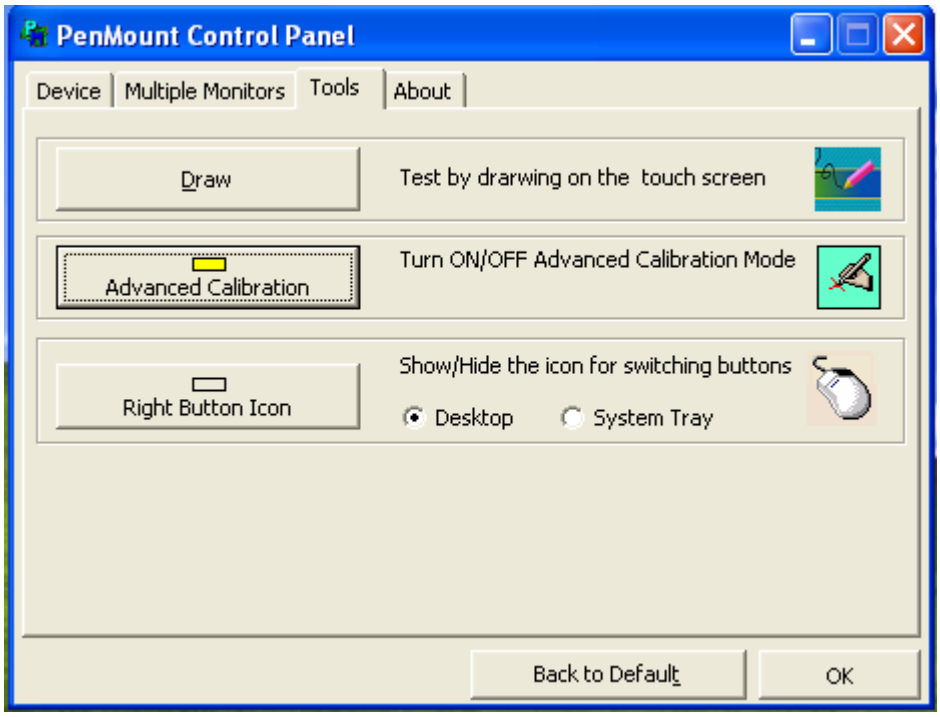
Step 2. Click “Standard Calibration” to start calibration procedure



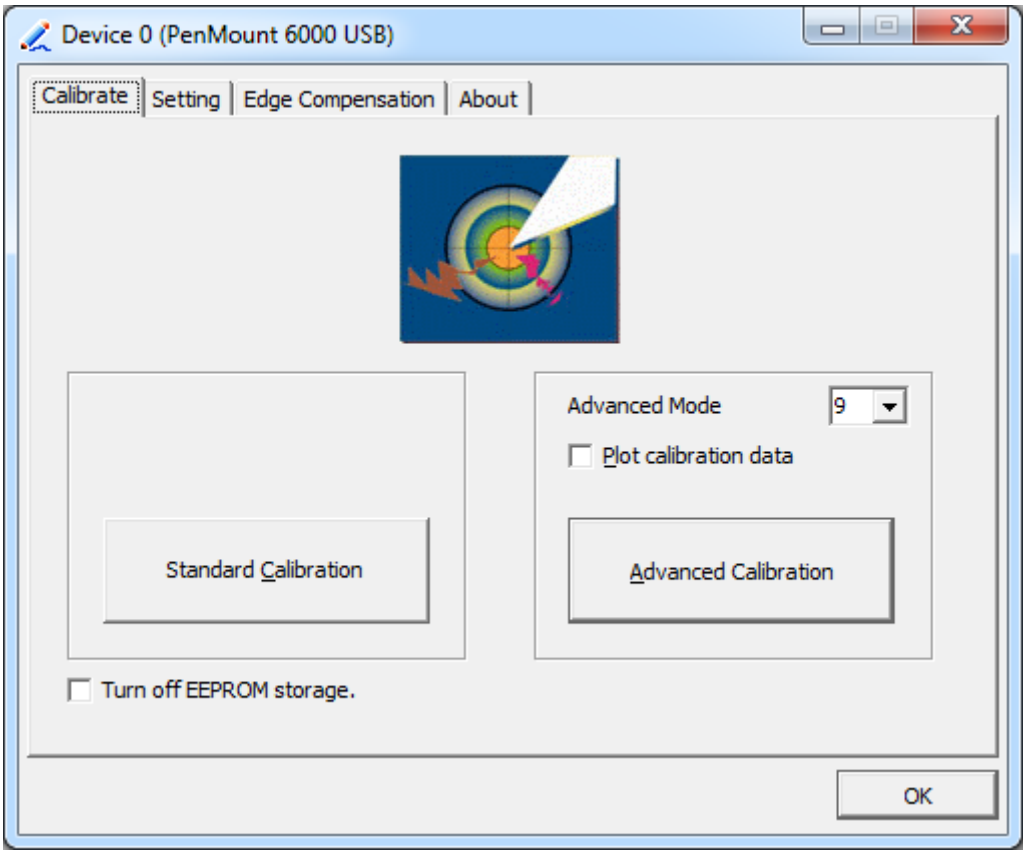


NOTE: The older the touch screen, the more Advanced Mode calibration points you need for an accurate calibration. Use a stylus during Advanced Calibration for greater accuracy. Please follow the step as below:

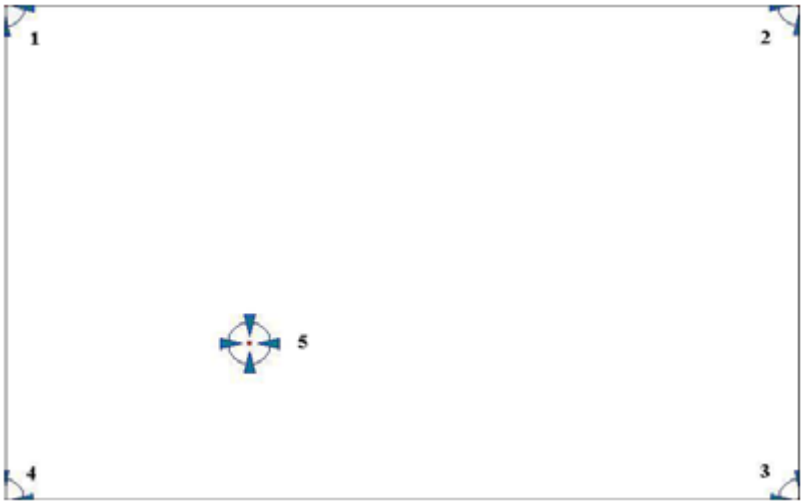
Step 3. Come back to “PenMount Control Panel” and select **Tools** then click **Advanced Calibration**.



Step 4. Select **Device** to calibrate, then you can start to do **Advanced Calibration**.



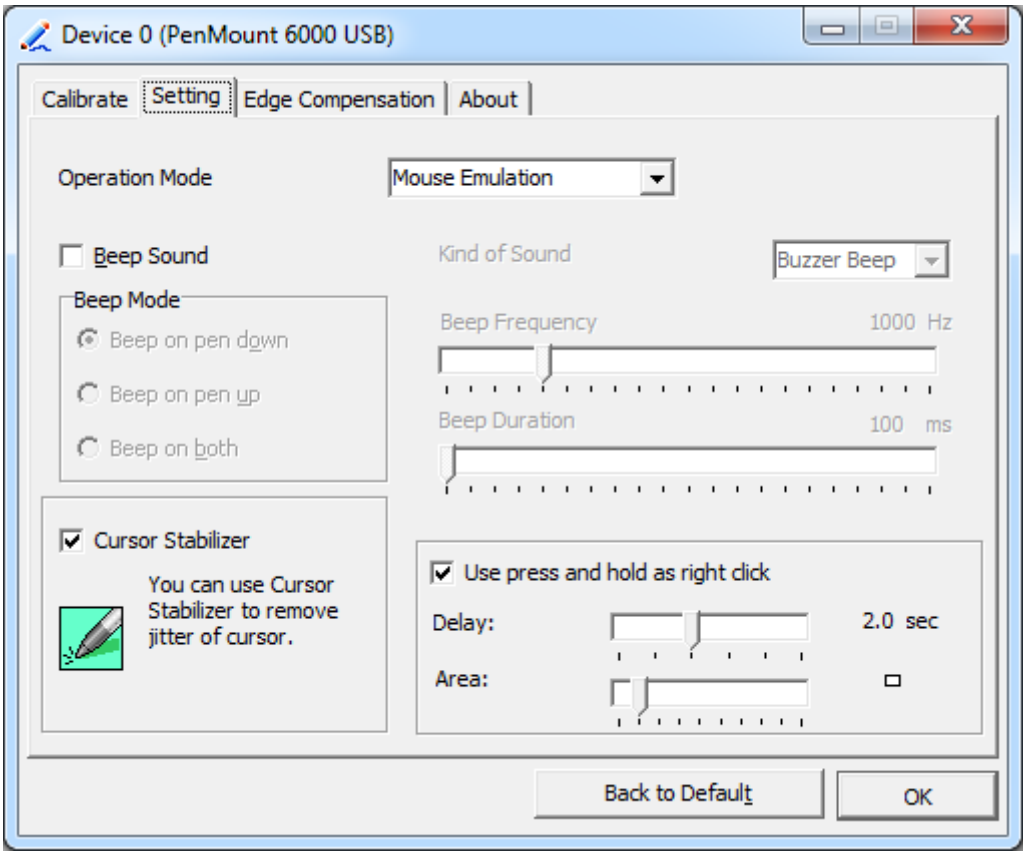
NOTE: Recommend to use a stylus during Advanced Calibration for greater accuracy.



Plot Calibration Data	**Check this function and a touch panel linearity comparison graph appears when you have finished Advanced Calibration. The blue lines show linearity before calibration and black lines show linearity after calibration.**
Turn off EEPROM storage	**The function disable for calibration data to write in Controller. The default setting is Enable.**

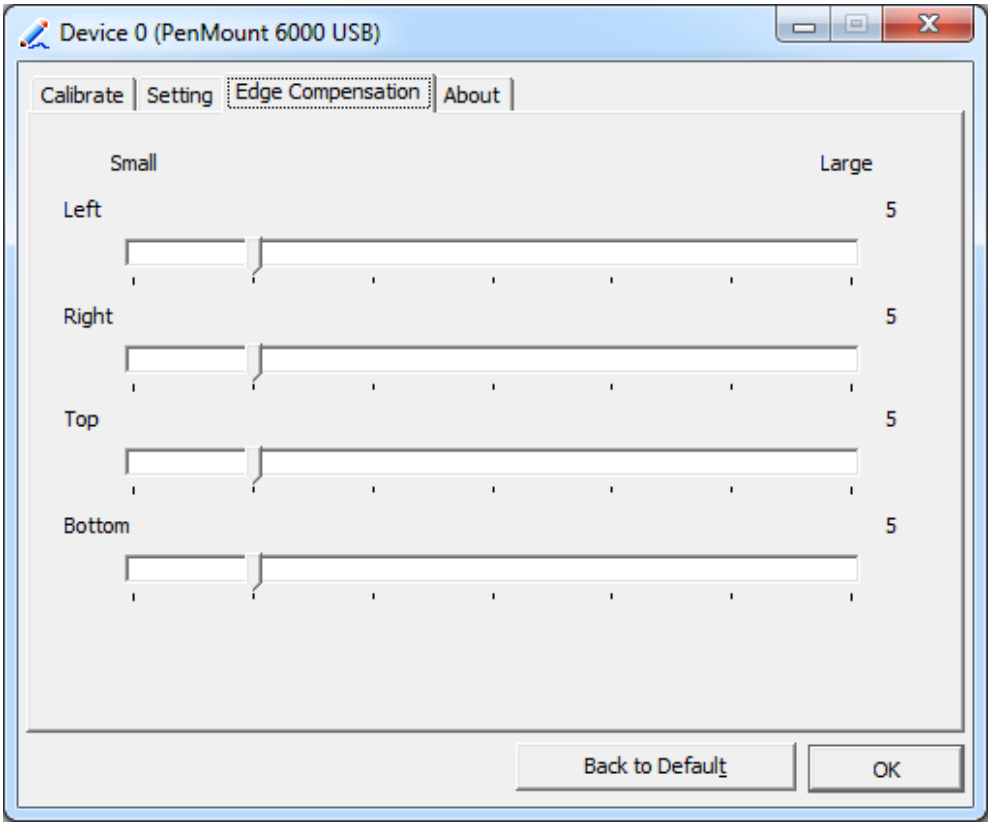
Setting

Touch Mode	**This mode enables and disables the mouse's ability to drag on-screen icons – useful for configuring POS terminals.** **Mouse Emulation – Select this mode and the mouse functions as normal and allows dragging of icons.** **Click on Touch – Select this mode and the mouse only provides a click function, and dragging is disabled.**
Beep Sound	**Enable Beep Sound – turns beep function on and off** **Beep on Pen Down – beep occurs when pen comes down** **Beep on Pen Up – beep occurs when pen is lifted up** **Beep on both – beep occurs when comes down and lifted up** **Beep Frequency – modifies sound frequency** **Beep Duration – modifies sound duration**
Cursor Stabilizer	**Enable the function support to prevent cursor shake.**
Use press and hold as right click	**You can set the time out and area for you need.**



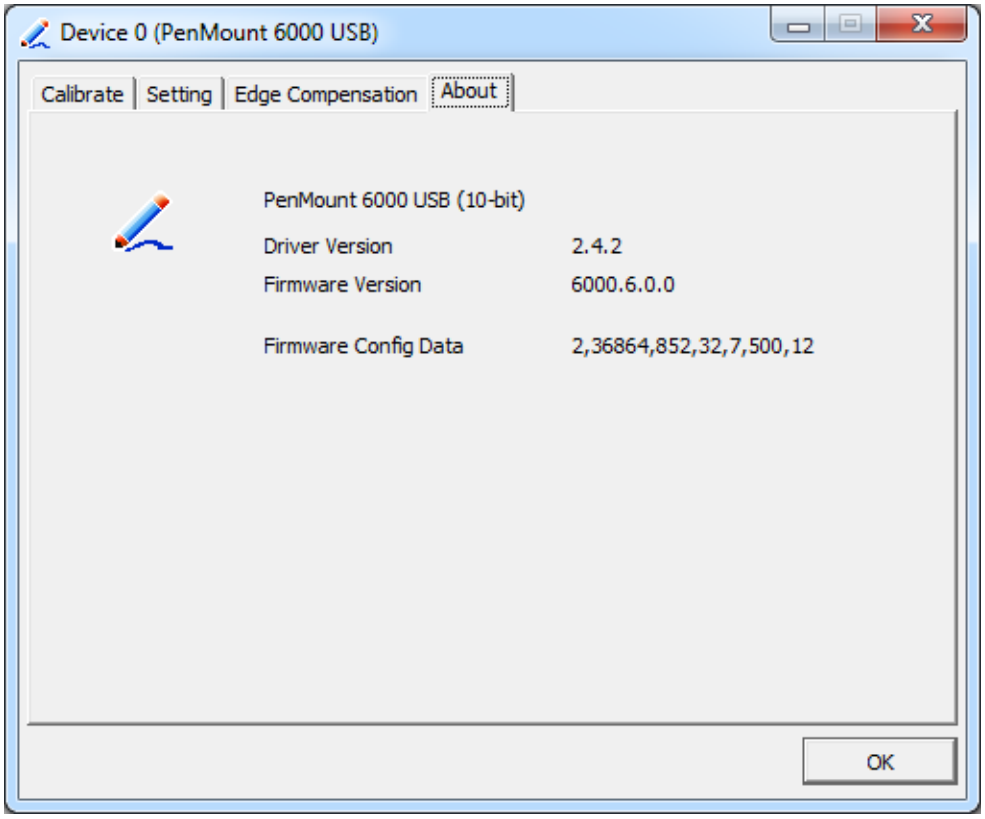
Edge Compensation

You can use Edge Compensation to calibrate more subtly.



About

This panel displays information about the PenMount controller and driver version.



Multiple Monitors

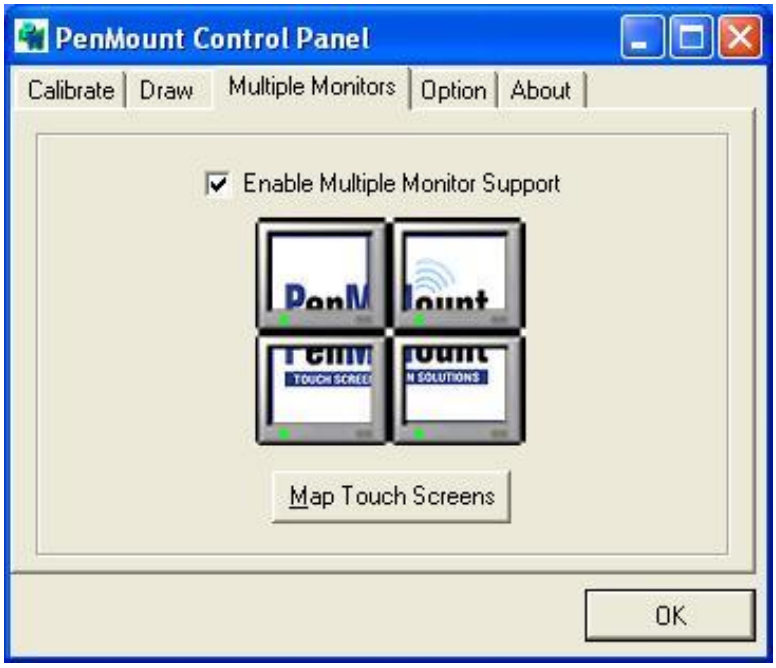
Multiple Monitors support from two to six touch screen displays for one system.
The PenMount drivers for Windows 2000/XP support Multiple Monitors. This function supports from two to six touch screen displays for one system. Each monitor requires its own PenMount touch screen control board, either installed inside the display or in a central unit. The PenMount control boards must be connected to the computer COM ports via the RS-232 interface. Driver installation procedures are the same as for a single monitor. Multiple Monitors support the following modes:

Windows Extends Monitor Function
Matrox DualHead Multi-Screen Function
nVidia nView Function

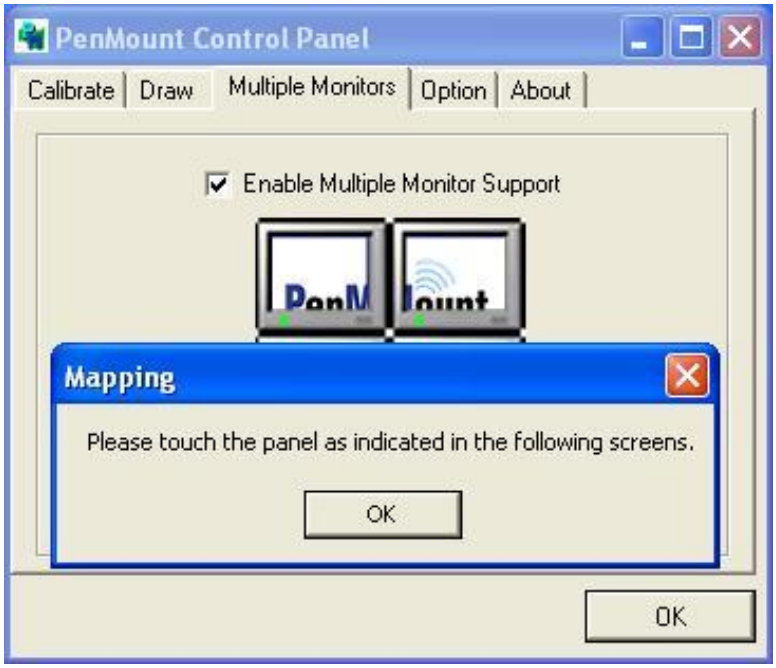
NOTE: The Multiple Monitor function is for use with multiple displays only. Do not use this function if you have only one touch screen display. Please note once you turn on this function the rotating function is disabled.

Enable the multiple display function as follows:

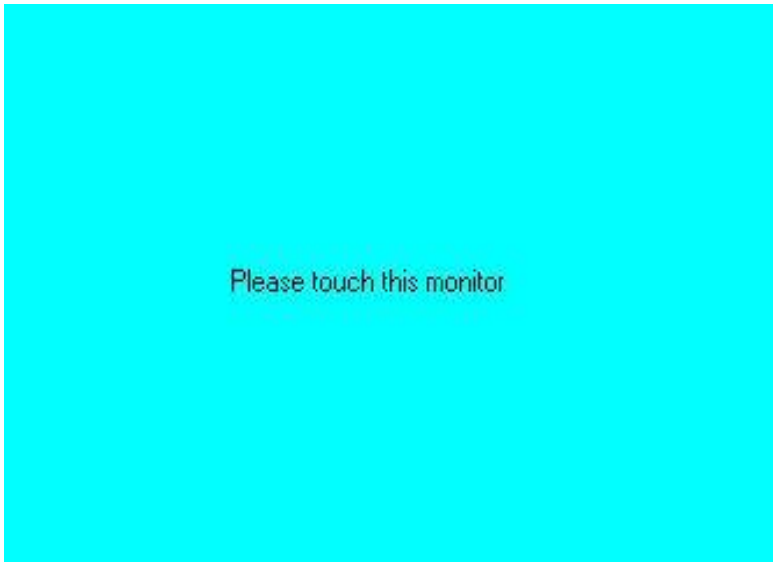
1. Check the **Enable Multiple Monitor Support** box; then click **Map Touch Screens** to assign touch controllers to displays.



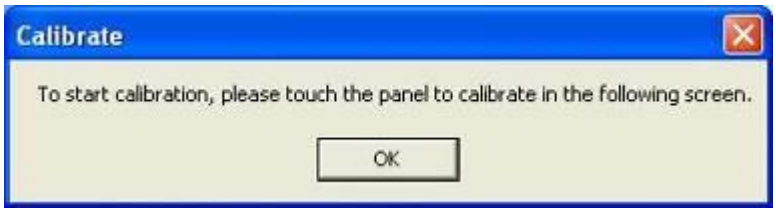
2. When the mapping screen message appears, click OK.



3. Touch each screen as it displays “Please touch this monitor”. Following this sequence and touching each screen is called **mapping the touch screens**.



4. Touching all screens completes the mapping and the desktop reappears on the monitors.
5. Select a display and execute the “Calibration” function. A message to start calibration appears. Click OK.



6. “Touch this screen to start its calibration” appears on one of the screens. Touch the screen.
7. “Touch the red square” messages appear. Touch the red squares in sequence.
8. Continue calibration for each monitor by clicking **Standard Calibration** and touching the red squares.

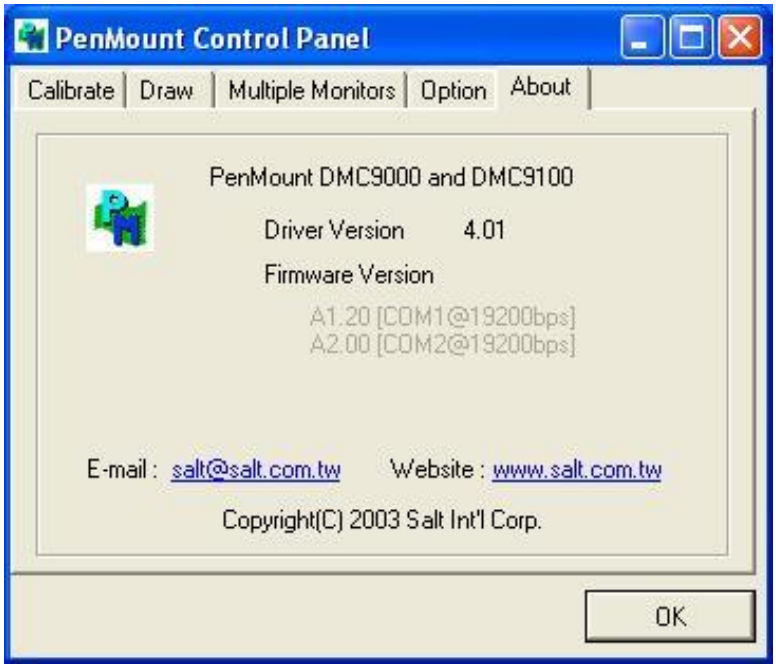
NOTES: 1. If you use a single VGA output for multiple monitors, please do not use the **Multiple Monitor** function. Just follow the regular procedure for calibration on each of your desktop monitors.

2. The Rotating function is disabled if you use the Multiple Monitor function.

3. If you change the resolution of display or screen address, you have to redo **Map Touch Screens,** so the system understands where the displays are.

About

This panel displays information about the PenMount controller and this driver version.



PenMount Monitor Menu Icon

The PenMount monitor icon (PM) appears in the menu bar of Windows 2000/XP system when you turn on PenMount Monitor in PenMount Utilities.

PenMount Monitor has the following function

Control Panel	**Open Control Panel Windows**
Beep	**Setting Beep function for each device**
Right Button	**When you select this function, a mouse icon appears in the right-bottom of the screen.** **Click this icon to switch between Right and Left Button functions.**
Exit	**Exits the PenMount Monitor function.**

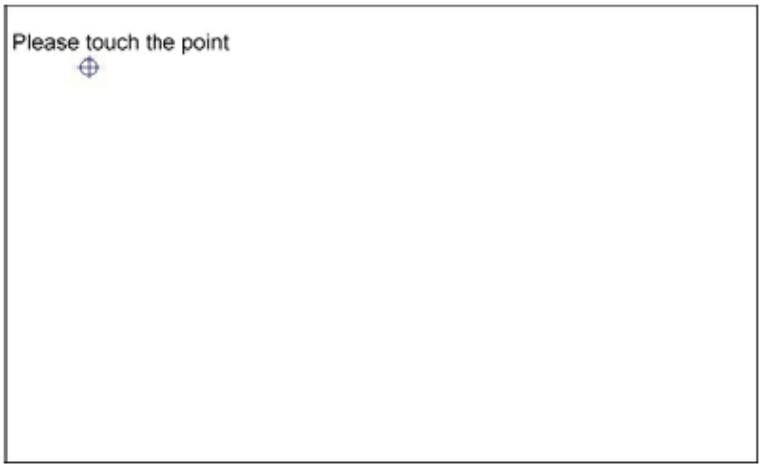
PenMount Rotating Functions

The PenMount driver for Windows 2000/XP supports several display rotating software packages. Windows Me/2000/XP support display rotating software packages such as:

- Portrait's Pivot Screen Rotation Software
- ATI Display Driver Rotate Function
- nVidia Display Driver Rotate Function
- SMI Display Driver Rotate Function
- Intel 845G/GE Display Driver Rotate Function

Configuring the Rotate Function

1. Install the rotation software package.
2. Choose the rotate function (0°, 90°, 180°, 270°) in the 3rd party software. The calibration screen appears automatically. Touch this point and rotation is mapped.



NOTE: The Rotate function is disabled if you use Monitor Mapping